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LECTURES ON DISEASES  
OF THE EYE  
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Fig. 2.

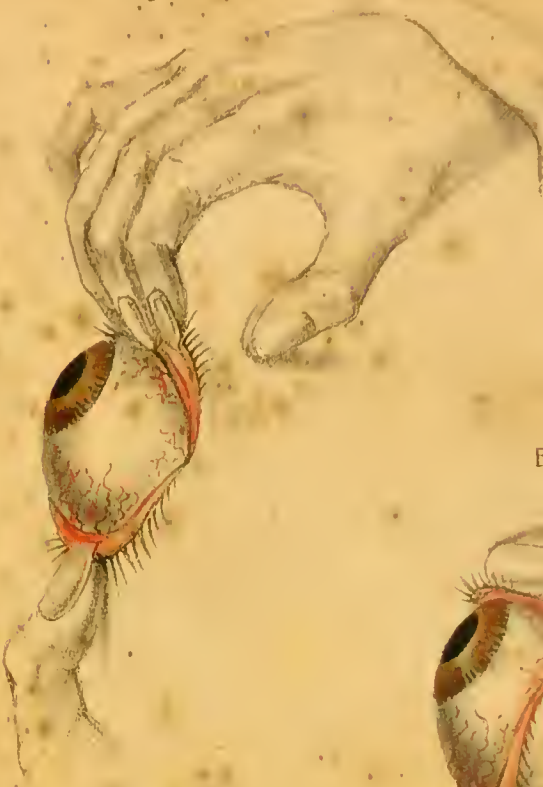
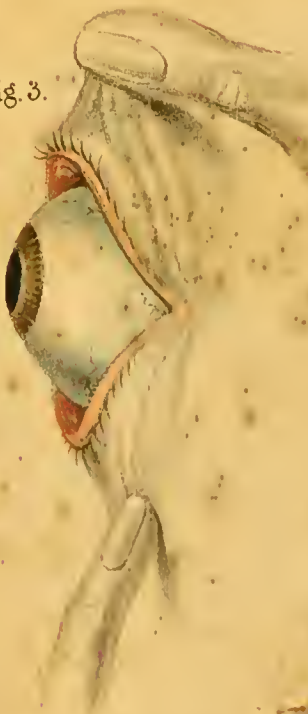


Fig. 1.



Fig. 3.



LECTURES  
ON  
DISEASES OF THE EYE.

BY  
JOHN MORGAN, F.L.S.

SURGEON TO GUY'S HOSPITAL, AND LECTURER ON SURGERY AT THAT INSTITUTION.

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*ILLUSTRATED BY COLOURED PLATES.*

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TO THE  
STUDENTS OF GUYS HOSPITAL,

*This Work is Dedicated,*

BY  
THEIR SINCERE FRIEND,  
THE AUTHOR.



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## P R E F A C E.

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THE following Lectures are published at the request of my pupils, and not from any wish, on my part, to appear before the profession, and the public, as an author of what will I fear be considered by them, as a very imperfect work, on the subject of Ophthalmic Surgery generally. This admission will, I trust, shield me from hypercriticism. Neither as a lecturer, nor as an author, do I put myself forwards as a competitor for professional fame and distinction, with those who have preceded me as the public instructors of their students on the science herein treated of, and as advocates for the connection of Ophthalmic with general Surgery; but having been repeatedly urged, not only in private, but publicly, by so many of my class to supply them by publishing my Lectures, with that, which

they considered would be a short text book for their guidance after they entered into practice, as well as during their studies at the Guy's Hospital Eye Infirmary, I now do so in compliance with their wishes, in the hope of affording them a permanent and perfect reminiscence of those instructions, which I have spent so many proud and grateful hours in offering to them. I cannot refuse to take all the chances of good or evil which may await me, in thus acceding to the wishes of my young friends, although laying myself open, as I doubt not I am now doing, to the censure of many who, perhaps, from various causes may have expected something better than my present production.

My object has been to describe concisely and clearly, the more common and the more important diseases, to which the eye is subjected, with what experience has taught me to be the best general treatment, and to illustrate, as much as possible, the analogy between diseases of the eye and those of other parts of the body.

If a detailed account of *every* morbid appearance, connected with the component parts of the organ of vision, minutely and classically described,



be required, I must refer my readers to the works published on the subject by Travers, Lawrence, Mackenzie, and some others; I have no pretensions to oppose to the learned productions of those gentlemen the humble volume, which is now offered to the student of Ophthalmic Surgery.

*Broad Street Buildings,*  
*March 30, 1839.*



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# ERRATA.

- Page 17, line 18 from the top, read "*already*" after "*been.*"  
82, line 16 ————— for "*her*" read "*its.*"  
87, line 11 ————— for "*irdis*" read "*iridis.*"  
88, line 4 ————— after "*irregularity*" insert "*is.*"  
88, line 5 ————— after "*phyloma*" insert "*of the.*"  
88, line 6 ————— before "*called*" insert "*is.*"  
177, line 19 ————— after "*ossified*" insert " ; "



# LECTURES

## ON

### OPHTHALMIC SURGERY.

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#### INTRODUCTION.

WHEN a public teacher commences a Course of Lectures on any important subject, it is customary for him to offer a few introductory remarks, or, in other words, to preface his future attempts, to instruct his class by what is called an Introductory Lecture—surely, on this occasion, I might be well excused for deviating from the ordinary course of my predecessors. Need I, in beginning a Course of Lectures on Ophthalmic Surgery, occupy your time, by reminding you in a lengthy address of the blessings which we all enjoy from the sense of vision, of the frail tenure by which that blessing is retained, under the influence of accidental injury or morbid excitement; or of the more than professional duty which you owe to those who may hereafter trust to your professional knowledge for relief, from one of the most dreadful calamities with which it has pleased

Providence to visit us! No, Gentlemen, no arguments can be necessary to strengthen *your* conviction of the importance of my subject; nor is a stimulus required to urge you forwards in the prosecution of its study. Year after year have I witnessed the zealous, the unceasing, the successful endeavours of the Students of Guy's Hospital in their attendance at our Eye Infirmary, to obtain a knowledge of what may be truly considered one of the most interesting and important branches of their professional education,—would that it were so with all our Medical Brethren! It is true, indeed, that the importance of the study of Ophthalmic Surgery is admitted by every member of our profession, for every one is convinced by his own personal feelings of the value of the sense of sight, and of the deep responsibility attached to the Surgeon in whose hands the restoration or loss of one of our most valued blessings must be placed.

But to what has this conviction led? Let any well-educated, unprejudiced Ophthalmic Surgeon, in even moderate practice, answer the question; and from his own experience he will tell you that, generally speaking, amongst the members of our profession it has been followed by a result far different from that which might naturally be expected.

It is a melancholy truth, that amongst the general body of medical practitioners in this country, ophthalmic surgery is too frequently neglected, notwithstanding its universally acknowledged import-



ance. That the difficulties attending the acquisition of a knowledge of the diseases of the Eye, and of their proper treatment, have been magnified an hundred fold, must be known to all now present who have witnessed the practice of myself and my assistant Mr. Edenborough, in the Eye Infirmary of Guy's Hospital, and have seen our simple, and, I trust, strictly scientific treatment, in our joint endeavours, by affording our pupils every explanation in our power, when visiting the wards, to show them and the rising members of our profession the inseparable connection existing between ophthalmic and general surgery. But, I regret to say, that it must be principally in the rising generation, that we can hope for the realisation of our wishes, and of the object of our endeavours.

The long established practitioner, in whose younger days this study was neglected, cannot perhaps be expected "to go to school again;" his numerous professional avocations prevent his doing so. He takes up, however, in a leisure hour, a long spun treatise on Ophthalmic Surgery, (having no time either to attend Lectures on the Pathology of the Eye, or to avail himself of the practical knowledge to be obtained in the wards of an Eye Infirmary,) and in that voluminous production finds a surprising variety of terms descriptive of common diseases, which, if reference is had to the treatment of the same diseases occurring in the structures of other parts of the body, will be found to yield to the same class of remedies; but the

multiplied names by which they are designated, bewilder him as a beginner so completely, that he gives up the subject in despair, under the soothing persuasion and consolation, that others far more distinguished than himself in his profession, are just as little, if not less, acquainted with eye diseases than himself.

This is the natural consequence of that deficiency in the professional education of our predecessors, which their professional practice and duties now prevent their repairing; another lamentable consequence however has arisen from this, I mean the introduction of empirical practitioners into that department of our profession, which has been deserted by the Surgeon, but which ought to be ranked amongst the most important and interesting that can engage the attention of a truly scientific medical practitioner. To what cause the neglect of Ophthalmic Surgery is to be traced, I am perfectly at a loss to conjecture; knowing as I do, with what zealous industry and success the pathology of almost every other structure composing the human body is studied; so that almost every member of our profession who has received his education within the last twelve years, is well qualified to perform most of the important operations which are required upon other parts of the body; and that to betray ignorance in the diagnosis of the common and ordinary diseases of other organs would be, in the present day, a disgrace to the individual. But if the organ of vision should become the seat of an ordinary disease, or the sub-

ject of an accidental injury, or if any of the common operations upon that part should be required, the case is altogether altered. A medical man may pass for an excellent operating Surgeon, a good consulting Surgeon, or an experienced and scientific Physician, without being able to distinguish most of the diseases of the eye one from another, and without knowing even the steps of the most common operations. If therefore the loss of our most valuable sense be threatened, if the most delicate and important organ in the whole system be the subject of disease, we are not to consider (according to the present state of public and medical opinion,) that the case is, strictly speaking, either of necessity a surgical or a medical one, and we consequently find, that a separate branch of our profession has originated from this circumstance.

I must strongly protest against this unfortunate and disgraceful separation; and hope and trust, that the time is not far distant, when the distinction between a Surgeon and an Oculist shall cease to exist. Now, it is true, that the diseases of the eye and its appendages are numerous; but it must at the same time be remembered, that they are easily known by obvious characteristic marks of distinction, and that their treatment is in most cases extremely simple. It is also true, that the operations upon the eye require the greatest coolness and dexterity in their performance, but it is not less certain that operations upon other parts of the body, require the same degree of self-possession and tact on the part of the operator.

I am not acquainted with any operation in which both manual dexterity and coolness are not required.

You have, I presume, already learned that the organ of vision is composed of a great variety of structure, this being essentially necessary for the performance of its proper function. Thus, we find a transparent medium to refract the rays of light,—a nervous expansion formed to receive the impression made by those refracted rays, and a protecting covering to these parts, of opaque membrane. The cornea and humors of the eye forming the transparent media; the retina forming the nervous expansion upon which the refracted rays are received; and the sclerotic, choroid, and iris, forming the opaque investments of these important parts. We find also, that the transparent humors are enclosed in serous membranes, and that the globe of the eye is connected with the lids by means of a mucous membrane (the conjunctiva).

From so great a variety of structure, we may naturally expect to meet with a corresponding variety of morbid phenomena; and in such an expectation we are not deceived. We consequently find that in the mucous membrane of the conjunctiva,—in the serous membrane of the aqueous humor,—in the tendinous structure of the sclerotic,—in the muscle of the iris,—and in nervous structure connected with these parts—we find that in each of these different tissues, some diseased action is liable to occur, for which we



can find analogy in a similar structure, and in another part of the body.

This circumstance I shall take occasion to point out more particularly, in describing the different forms of disease to which the several textures are subjected. It must be obvious to every one, that in all cases, and under all circumstances, the great object in the treatment of diseases of the eye, will be to prevent or to remove any obstruction to the rays of light through the transparent parts, and to preserve or restore the healthy functions of its nervous communication with the brain,—for of course, whilst the humors and cornea remain transparent and of their natural form and consistence,—whilst the pupil remains open,—and the rays of light are thrown upon a healthy retina and optic nerve, the sense of vision must remain entire. It is therefore upon a knowledge of those morbid actions which may lead to disturbance of this natural and healthy state of parts, that the proper treatment of Ophthalmic diseases must principally depend.

Thus, when inflammation occurs, in the sclerotic, the choroid, the iris, or in the conjunctiva, we know that a long continuance of the disease would never interfere with the functions of the organ, whilst that disease was entirely confined to these structures ; but we know how rapidly the inflammatory action is carried from these opaque and protecting membranes, to the more important and deep-seated textures ; and it is to prevent this, that we are frequently called

upon to pursue a plan of depletion in the commencement of superficial inflammation, which to an inexperienced practitioner, would appear uncalled for, by the apparent indications of morbid excitement. But the prevention of disease in the transparent and nervous textures, by anticipating and checking its progress from adjacent parts, is a point in practice, to which a Surgeon cannot pay too much attention.

Trivial causes of excitement in the surrounding parts, may lead, if uncontrolled in the first instance, to disease and disorganisation of the transparent and nervous textures; a consequence of neglect, which is now and then met with by every one who has seen much of Ophthalmic diseases.

In active diseases of the Eye, there is one general rule, which you cannot remember too well,—it is “never to rest contented with merely checking the progress of disease,”—never, if you think that you can prevent it, by pushing your remedies still farther,—never allow a disease of the eye to remain stationary. In other organs, where you have neither the transparency or integrity of a delicate tissue to preserve, nor an expanded sheet of nervous matter to protect from the slightest causes of disease, this may not be a point of any very material consequence. But, in active diseases of the eye, the delay of remedies for twenty-four hours will, in some cases, prove a sufficient cause for complete disorganisation of the organ.

Never, therefore, in any cases, or under any cir-

cumstances, rest satisfied with watching day after day the partial control of remedies in Ophthalmic disease. Unless you are daily diminishing that disease, you are doing your patient more harm than good, by your treatment; for whilst you are watching and waiting for the more obvious effects of your half measures, the half-controlled disease will be insensibly extending to more important parts; and by the time you have determined upon altering the plan of treatment, either the functions of the retina will have been destroyed, or the condition of the transparent parts of the eye will have been permanently changed. Therefore, remember, that in allowing any active inflammatory disease of the eye to remain stationary for a day, you are endangering the safety of the organ. This rule may apply to all inflammatory diseases of important organs; but it is more particularly applicable to the organ of vision.

Now, before I proceed to describe to you the symptoms and treatment of the diseases of the eye, I wish you to understand the particular object which I have in view, in delivering these Lectures. In the first place, you will recollect that it is not my intention to describe with the absurd minuteness of a professed oculist, each trifling deviation from the ordinary diseases of this organ, which have been unnecessarily made the subject of a separate description, and of a separate name. It is my wish to generalize the subject,—to show you, by pointing out the analogy of the diseases of the eye with those of other

parts, that Ophthalmic surgery and general surgery are one and the same science. It will be my object to prove to you how much the difficulty of discriminating and treating the different diseases of the organ have been overrated, and to point out to you the best mode of acquiring dexterity in the performance of those operations, which are occasionally required. I will not promise you that you shall be able to apply to each morbid change of structure the variety of names by which it has been described, by foreign writers. But I think I may promise you, that you shall know the appearances presented by disease of every kind in the part, and that you will therefore be enabled to suggest in all cases the proper remedies, by applying to them those principles, by which the practice of every other branch of our profession is established and regulated.

Such being my object, I shall begin my description of the Diseases of the Eye, as it is usual to describe diseases of other organs, and shall therefore begin with the effects of common inflammation.

#### FIRST—OF DISEASES OF THE CONJUNCTIVA.

That the Conjunctiva bears a close relation to the mucous membranes of other parts of the body, is clearly proved by the anatomical peculiarities of its structure, as well as by the obvious purposes which



it serves in the economy of those parts to which it is connected ; and, therefore, if my position be true,—if it be true that in those component parts of the eye, which are analogous to the component parts of other organs,—if it be true that where we find a similarity of structure between the textures composing the eye and the textures composing another organ in the body, we shall also find a similar train of diseases as a consequence of the same exciting causes. If such be really the case, we shall undoubtedly find that every disease to which the conjunctiva is subjected, is nothing more nor less than the common disease of a mucous membrane.

Now, let us see how far we are borne out by facts in this supposition. The first disease which I shall describe to you will be Catarrhal Ophthalmia. We all know from personal experience the effects produced upon a mucous membrane in other parts, by what is commonly called a *catarrh*, or more commonly perhaps, *a cold*. We all know, that from exposure to certain states of the atmosphere, a morbid action is set up in the Schneiderian membrane of the nose, in the fauces, or in the bronchial tubes and larynx, the result being known under the terms—cold in the head, hoarseness, and sore throat, according to the nature of the part affected.

Now, the symptoms of catarrh, as affecting the mucous membranes of other parts, are very similar to those which distinguish Catarrhal Ophthalmia from other diseases of the eye. The symptoms of this disease will be as follows (the causes I have already

mentioned to be the same as in common catarrh)—the first symptoms of Catarrhal Ophthalmia will be an uneasy sensation, or rather a smarting, on one particular spot on the globe. If you see this disease in its commencement, and are guided in your diagnosis by the local and visible indications of morbid action, and by the feelings expressed by your patient, you will most probably mistake the case altogether. You will conclude that some particle of sand or some other extraneous substance is lodged in the part. The individual will tell you that he suddenly became the subject of a sharp and smarting pain, precisely resembling that which arises from the introduction of a foreign body between the conjunctival surfaces; no persuasion will convince him that a particle of dust is not lodged in the part. You perceive that the eye is watering profusely,—you separate the eye-lids, and see a spot of diffused inflammation on the conjunctiva, — not on the conjunctiva covering the globe, but upon the conjunctiva lining the palpebræ. The first indication of Catarrhal Ophthalmia shows itself in the conjunctiva palpebræ. In a short time the vessels of the whole surface of the conjunctival membrane covering the sclerotic becomes injected with red blood; but in the first, and in the very first stage of the disease it is usual to find the conjunctiva of the lids only affected.

Now it is of consequence that you should know the distinguishing marks between inflammation of the conjunctiva arising from the impression produced by cold upon the surface of the body, and that

inflammation of the membrane which is produced by a mechanical cause of irritation,—between catarrhal ophthalmia and inflammation of the conjunctiva from the pressure of an extraneous substance upon its surface. In some cases the diagnosis will be difficult and obscure, but in most cases the following rules will prevent your making any mistake in distinguishing the two diseases.

In Catarrhal Ophthalmia we frequently find a distinct surface of inflamed conjunctiva upon that part of the membrane which covers the lids, and upon that part only. In those cases, where inflammation of the membrane arises from the irritation of a foreign substance pressing upon the part, this partial effect can never be produced; for the local irritant being placed between the conjunctiva of the globe and the conjunctiva of the lids, will press equally upon both; and, therefore, any appearance of increased vascular excitement observed in one part will be attended with a similar indication of disease in the other,—the foreign body pressing equally upon both surfaces will produce a degree of inflammation in the conjunctiva of the globe, corresponding with that which is observed in the conjunctiva of the lids. In one case, then, both surfaces will be necessarily inflamed. In the other case it occasionally happens that one surface only will be the seat of disease.

In addition to the general inflammation of the conjunctiva of the globe following the introduction of an extraneous body, you will find that a copious

secretion from the membrane and from the lachrymal gland is immediately and constantly poured out. In Catarrhal Ophthalmia this secretion is neither so profuse nor so long continued as in the other case.

I do not mention these diagnostic symptoms as applicable to *all* cases, but in *many* they will be found conclusive; for it often happens that in Catarrhal Ophthalmia the inflammation of the conjunctiva of the *lids* will precede every other local symptom, and this alone will at once convince you that mechanical irritation is not the cause of the disease; we find intolerance of light in both.

The commencement of Catarrhal Ophthalmia at one point, and the sensation of a pricking smarting pain at that part may be compared to a similar affection in the *fauces* from a similar cause.

In common inflammatory sore throat from catarrh, you know that frequently the first symptom is that of a smarting pricking pain, which is referred to one point in the mucous membrane of the mouth, generally in the situation of the tonsil glands. This pain being only felt during the process of deglutition. It is only felt during the time of swallowing, because at that time only the inflamed surface is pressed upon and irritated; but when a part of the conjunctiva is inflamed, it is constantly rubbed and pressed whenever the globe of the eye is moved in the orbit. In consequence of the two surfaces of the membrane lying in close apposition, therefore the pain in one case is almost constant,—in the other case it is only



produced occasionally by the process of deglutition. The cause and effect of morbid excitement is the same in both cases.

As the disease proceeds, a general inflammation of the sclerotic and palpebral conjunctiva will ensue. It does not, however, show itself in the *first* instance in the form of a diffused inflammation of the membrane. In many cases you will see the surface reddened in patches, by the partial distension of the vessels; in a short time, however, the redness becomes general and diffused. It is only in the very first stage that the partial distension of the vessels can be seen. In this form of disease the red vessels appear first on the posterior surface of the membrane, and gradually advance towards the front of the organ. The appearance of these vessels is highly characteristic of the nature of the disease; they are of a bright scarlet colour, and easily moved from their situation by the pressure of the finger or the motions of the lids; the trunks of these vessels are slightly elevated and tortuous in their course.

In sclerotic inflammation the vessels are pink, straight in their course, radiating from the junction of the cornea with the sclerotic, and immovably fixed in the tendinous structure which surrounds them (Plate 17). From the number of tortuous conjunctival vessels which thus become filled with red blood, the membrane presents a uniform bright scarlet appearance (Plate 1, fig. 1), echymosis

of the part often supervenes both in the commencement and in the advanced stages, and at this period another strong diagnostic symptom will be present.

I have just told you that intolerance of light and lachrymal discharge were amongst the earliest indications of the disease. These symptoms, however, disappear as soon as the general redness of the conjunctiva becomes apparent. We then find less intolerance of light, and an altered secretion from the morbid parts.

By this altered secretion you will generally be able at once to detect the nature of the disease. It is poured forth entirely from the mucous membrane of the conjunctiva, and like the secretion from the Schneiderian membrane of the nose under a similar morbid excitement, will commence at first as a thin semi-transparent yellowish effusion. This effusion will be more sparingly poured out at first than in the subsequent stages of the disease. After a time the excited capillaries find a free outlet for their secretions; and we consequently observe that the quantity, as well as the quality of these secretions, are materially altered. Thus the discharge becomes thick and opaque, and is of a yellowish white colour.

The quantity of catarrhal discharge in these cases will vary in different individuals and under different causes of morbid excitement. In the milder forms of the disease, you may perhaps merely observe a whitish deposit upon the edges of the eye-lashes and inner canthus of the eye. If the disease be severe,

the profuse discharge will be poured over the cilia and lids, and by forming incrustations upon those parts, will frequently glue them together, so as completely to close the eye. In very severe cases the discharge somewhat resembles a muco-purulent secretion, and in cases of a mixed character this disease will now and then terminate in the purulent form of inflammation, as we sometimes find to be the case as regards the complaint when attacking other mucous membranes. The discharge, however, from the conjunctiva in pure Catarrhal Ophthalmia is mucous, and not purulent; and it is this mucous discharge which characterises the disease.

As in common catarrh affecting the nose and fauces, so in this conjunctival affection, the neighbouring and continuous mucous membranes are not unfrequently partaking, though in a less degree, in the morbid action already which has been set up. A sense of weight, and in some cases a sense of pain, is experienced in the situation of the frontal sinuses, and more rarely in the antrum maxillare.

The febrile excitement attending Catarrhal Ophthalmia is proportioned to the severity of the local affection. In very mild cases the constitution does not suffer. In severe cases we have the usual symptoms of pyrexia, viz. rigor, accelerated pulse, deficiency of perspiration, heat of skin, headache, and a loaded tongue, with constipated bowels; but in most instances the disease is remittent, the symptoms becoming milder during the day and returning with

greater severity at night. This symptom, together with the comparative absence of intolerance of light, notwithstanding the highly inflamed state of the conjunctiva and the mucous effusion, which is always present to a greater or less extent, will distinguish Ophthalmia produced by catarrh from every other form of conjunctival disease. It is essentially one of the conjunctiva, and in its commencement confined to that tunic only.

It is true, that from neglect or improper treatment acute inflammation may supervene and extend to the cornea or the sclerotic; but the specific character of the disease will not be altered in this case, for it is specifically a disease of a mucous membrane only, produced by the cause I have mentioned, and modified, of course, like other morbid affections, by various contingent influences.

The extension of the disease to other tunics is not an essential character of the disorder. You know that a neglected cold or catarrh may lead in some cases to the production of phthisis, or to the development of a strumous diathesis, or to other diseases of a different kind; and so it is that every now and then neglected Catarrhal Ophthalmia will lead to disease and disorganization of surrounding parts. The treatment, therefore, is important, not only in reference to the consequences of present symptoms, but as regards the serious effects of their unabated continuance upon adjacent structures.



## TREATMENT.

In the first place the stomach and alimentary canal must be freely cleared by a brisk purgative, of which some preparation of mercury should form a part. If the tongue be loaded, and more particularly if there be any disposition to nausea, an emetic will be found useful in clearing the stomach of its morbid secretions. The effort of vomiting will not produce the same injurious effects in this as in some other diseases of the eye, for in this case the inflammation is entirely superficial. Increased and temporary congestion of the vessels, therefore, during the expulsion of the contents of the stomach, will not, by pressure or otherwise, interfere in the slightest degree with the nervous expansion of the retina, as is the case in deep-seated acute inflammation of the other tunics. Emetics, then, may always be given with safety in cases of pure acute conjunctival inflammation.

To proceed. Having cleared the intestinal canal, your next object will be to abstract blood in quantity proportioned to the age and condition of the patient, and to the degree of morbid action which is present. It is very rarely necessary in this complaint to bleed largely, and hardly ever from the arm. Local depletion, by cupping or leeches, will generally be sufficient to arrest its progress.

In some cases, however, where we find a young and plethoric subject with this disease in a very

acute form, it will every now and then be necessary to abstract blood from the arm in the first instance. As there is but little if any disposition to irritability of the retina,—hardly any intolerance of light,—and as a close covering to the eye produces usually an aggravation of local suffering, it will be right to avoid the use of a bandage; a light shade is to be worn, and the heat and light of a fire, and the strong light of a candle, are to be avoided.

Now, with regard to lotions or local applications, you will find *generally* that saturnine or evaporating washes are of the most use. Sometimes, however, in Catarrhal Ophthalmia the most grateful application will be warmth and moisture. In the choice of these two, therefore, you will be guided by the feelings of your patient.

Previous to the patient going to bed, the eyelids should be smeared with some mild ointment, to prevent their sticking from agglutination of mucous discharge, and the incrustations on the roots of the eyelashes removed by tepid ablutions.

With respect to constitutional remedies, they will consist in diaphoretic and mildly purgative neutral salts. Your object in Catarrhal Ophthalmia, as in common catarrh, will therefore be to restore the natural secretions of the body, and to prevent extension of a local affection from a texture where it can do but little injury to a neighbouring part, where it may produce the most injurious possible consequence. You therefore purge freely in the first instance, and

if necessary, clear the stomach by an emetic. You then promote the continued secretion and peristaltic motion of the viscera by the daily exhibition of a mild saline purgative, at the same time that you are exciting the exhalent vessels of the skin by diaphoretics. In this endeavour, considerable assistance may often be afforded by the use of a warm bath.

You endeavour to lessen vascular action in the part by local, and if necessary, by general bleeding; and in this will be comprised the treatment of the disorder in its first and acute stages. These remedies will usually be sufficient to remove the complaint in a few days. But if you find after this that any slight inconvenience is remaining, the chronic irritation in the part will be removed by anodyne collyria and counter-irritants. A blister should be applied to the temple or nape of the neck, and equal parts of Aq. Ros. and Vin. Opii furnished as a collyrium.

Catarrhal Ophthalmia is never produced solely by dyspepsia, as has been supposed. It must, of course, be admitted that a disordered digestive apparatus will render the system in many cases more susceptible of receiving impressions from common causes of disease, and consequently we frequently find in Catarrh, as well as Catarrhal Ophthalmia, that the disease is preceded by every indication of dyspepsia; but another cause must be superadded to produce the train of morbid symptoms by which the two diseases are essentially characterised.

I have now endeavoured to describe to you the

consequences and treatment of Catarrhal Ophthalmia. I need not occupy your time by drawing the parallel still closer between this disease and common catarrh of other mucous membranes. The similarity must, I think, be obvious to you all.

The disease which I have described, like many others affecting the conjunctiva, is liable to recur, and will now and then, after that portion of the membrane covering the globe has returned to its former healthy condition, leave the palpebral conjunctiva thickened and discoloured by chronic inflammation. This state of parts is called Ophthalmia Tarsi; in its more advanced and aggravated form, the Meibomian follicles, the glands secreting the eyelashes and adjacent textures become involved, and a disease which I shall hereafter describe to you is the consequence; it is known by the name of Lippitudo, to which I shall direct your attention, more particularly when I speak of the diseases of the eyelids and of the appendages of the eye. At present I need only remind you that chronic inflammation confined to the conjunctiva lining the tarsal cartilages is called Ophthalmia Tarsi, and that it is a frequent remnant of Catarrhal Ophthalmia as well as of other morbid affections of the membrane.

I have thus endeavoured to make you acquainted with the appearances presented by catarrhal inflammation of the conjunctiva in its different stages; and, in conclusion, I think it may be useful to the beginner to offer a few instructions as to the best mode of

obtaining a clear and satisfactory view of the morbid changes I have pointed out as diagnostic marks of distinction, by which the complaint may be at once recognised. In other words, to show you how to examine your patient's eye by separating the lids in the proper way when consulted for this or any other diseases of the organ of vision, more particularly, however, for those accompanied by inflammation. In every case it will be your object to effect a separation of the lids and expose the globe behind them in a manner best calculated to guard against the occurrence of irritation in the part, as a consequence of your proceeding.

It must be manifest to every practical surgeon, that in order to determine correctly upon the propriety of adopting one plan of treatment or another in cases of inflammation, it is almost essentially necessary that no cause of temporary excitement should be added to the diseased action already set up. That in order to determine upon the propriety of pursuing any particular plan of general and local treatment, the real specific character of the disease should alone be indicated :—for instance—if consulted upon a case of strumous inflammation of the knee-joint, you would not consider yourselves proper judges of the peculiarities of the case, if you were informed that your patient had just before your visit been ordered to excite the affected tissues to increased morbid action by walking or by throwing the weight of the body upon the inflamed part. You would know



that the naturally morbid condition of that part was concealed by artificial excitement; you could therefore give no correct prognosis, until (by rest and proper remedies) the effect of that artificial cause of excitement had subsided.

It may appear absurd to suppose that any medical man in his senses would throw a stimulating injection into the eye, as a preparatory step to separating the lids, and obtaining in that way a view of the inflamed globe. Yet many are producing now and then the very same effect as that which would result from such a proceeding, by different means. This effect is occasioned by the manner in which many a novice is in the habit of opening an inflamed eye. I speak of what I am not unfrequently witnessing in my practice; and as I know how few of you are acquainted with the proper mode of examining an inflamed eye, I shall take this opportunity of giving you a few directions upon the subject. There are three different ways of opening the eyelids, represented in Plate 18, figs. 1, 2, 3; and although each of the diagrams is a caricature, I do not hesitate to say that many who see them would, if asked, mistake the right way for the wrong, or vice versâ.

The usual mode in which a bungler makes the attempt is represented in fig. 1. Each thumb is placed on the margin of the tarsal cartilages—pressure is made down upon the globe—the orbicularis contracts powerfully from sympathy—and thus the conjunctiva of the lids and of the globe are rubbed



together as the lids are slid over the anterior part of the latter. The natural consequence of this mode of proceeding must be obvious ; when two inflamed membranes are rubbed and pressed together, of course the diseased action will be increased ; and, consequently, when a successful effort has enabled the operator to draw asunder the lids in the manner I have now described, it is found that the vascularity of the part is very greatly increased from irritation produced by previous pressure and friction.

This, then, is the most common mode of opening an inflamed eye improperly, and the consequences are always, as I have stated.

The next diagram (fig. 2) represents a less common, though at the same time a far more injurious mode of making the examination. It consists in the process of insinuating elongated finger nails between the lid and the globe, and thus clawing the inflamed surfaces asunder. That such an operation must necessarily tend not only to produce a temporary excitement, but also a permanent increase of inflammatory action in the part will not be doubted. Yet I know from experience that this operation is practised too frequently to be passed over in silence upon the present occasion. Look at these two diagrams, and see whether before you are twelve months' older, you do not observe an illustration of the error here represented.

Having now shown you the consequences of an unskilful attempt to open an inflamed and swollen

eye, I will next describe to you the proper mode of performing this very simple operation.

Your object will be to *separate* the inflamed surfaces of the conjunctiva of the lids and globe at the time you are opening the eye, and to avoid making any pressure upon the part; this will be easily accomplished, unless excessive tumefaction of that part be an obstacle, by gently drawing the integuments of the lower lid downwards towards the cheek with the point of the fore-finger of one hand, and with the thumb or fore-finger of the other, drawing the skin covering the upper lid upwards towards the supra-orbital ridge, — the diagram (fig. 3) represents what I have described. Be careful in opening an eye to avoid throwing a strong light on the part, as it sometimes renders the operation difficult, from the spasmodic contraction of the orbicularis palpebrarum, and in cases where the retina has been rendered morbidly irritable, a temporary increase of vascularity will generally be the consequence.

You may perhaps think that I have laid great stress upon a comparatively trifling subject, but experience will prove to you that minor points in your surgical practice are of more importance than you may now suppose.

In tracing the different effects produced by various modifications of inflammatory action on the membrana conjunctiva, I next pass on to another disease of that part, which, like the one I have just described, is of common occurrence, more frequently met with

however in children and those under the age of puberty than in adults, and not often in advanced age,—the disease to which I allude is

PUSTULAR, OR, MORE COMMONLY SPEAKING,  
APHTHOUS INFLAMMATION OF THE CONJUNCTIVA.

This disease is closely analogous to aphthous inflammation of the fauces and other mucous membranes. It may arise from a great variety of exciting causes, and is very frequently seen in combination with Catarrhal Ophthalmia, or with strumous diseases of the organ of vision; but for the most part it will be met with as a separate idiopathic disease, occurring like other inflammatory diseases either in an acute or chronic form. Strumous and cachectic persons are most prone to the complaint. The symptoms will be as follows:—If seen at the very commencement, a minute whitish raised speck will be observed on the surface of the membrane, around which extremely minute bright red vessels radiate, in the form of a plexus, and are tortuous in their course, and occasionally in the *first instance* receive no visible supply of coloured blood from adjacent larger trunks. The reddened circle is perfectly distinct, and if occurring on the sclerotic conjunctiva, where its cellular connection is comparatively loose, it can be distinctly proved by moving the aphtha from side to side with the point

of the finger, that no subjacent supply of red blood is sent to the part through its base from the vessels which lie behind it. After a time conjunctival vessels, in the form of a fasciculus, are seen carrying red blood from the circumference of the globe to the aphtha, and then pour out their supply to its surrounding vascular zone; but not always in the first instance, for the zone is in some rare cases circumscribed and distinct. Now, of course, you know that aphthæ or pustules in other parts are surrounded by a red margin, and have been told that this arises from the passage of red blood from larger trunks into those minute ramifications of the vascular structures formerly carrying colourless blood. On examining the part, however, to see the causes of the change which has been going on, you see only a blush of inflammation, the vessels being too small to admit of examination without the aid of a strong magnifying power; but it is not so when inflammation attacks the conjunctiva, and reddens that membrane; for, under such circumstances, the fact is proved to you by ocular demonstration. But a still more interesting pathological fact appears also to be proved by one circumstance I have mentioned, viz. that in inflammation the change of the fluid contents of an artery from colourless to red blood does not necessarily depend upon the direct transmission of the red particles from a larger trunk into the dilated capillaries; that such change does take place is undoubted, but that the redness of an inflamed structure depends exclusively upon this

mode of altering the colour of the component parts of the circulating medium is surely rendered more than problematical by the already described phenomena (to which others might be added, and) which present themselves so clearly to our notice during the commencement of the formation of a conjunctival aphtha. How can we suppose, in these cases, that the colour of the blood is changed in the vessels, unless we look for some cause in addition to that of the mere mechanical conveyance of the red globules from the larger to the smaller branches of an artery.

To pursue this subject further, would, however, be foreign to my purpose. I have merely made allusion to it now, as I think the morbid appearances I have described bear strongly on a disputed point of great interest as regards its connection with the study of the pathology of inflammation generally.

To continue, then, my description of the progress of aphthous ophthalmia. The contents of the white elevation or aphtha, already mentioned, consist in the first instance of a semigelatinous watery fluid, consisting of serum and adhesive matter. In the course of a short time it will be found to consist principally of an adhesive deposit, but suppuration in the spot is not a character of the disease, and therefore a true pustule is not formed. The elevation or aphtha being almost entirely the result of an effusion of lymph and not of pus, resembling therefore precisely the same disease in other parts.

This, then, is the diagnostic mark of aphthous in-



flammation of the conjunctiva, namely, the appearance of one or more minute, circumscribed, round, and elevated spots of effused lymph, surrounded by a plexus of red vessels. You will find that the most common situation for the aphtha will be on the conjunctiva, at the junction of the sclerotic with the cornea, and sometimes on that of the cornea, or on different parts of the sclerotic, either of the globe or the lids. It most usually occurs, however, at or near the junction of the cornea and sclerotic.

The size of the pustule or aphtha will vary in different individuals. In cases where only one forms, you will generally find that it is larger than where there are a considerable number, and the surrounding parts will be less inflamed than when apthæ are very numerous.

Now this complaint may terminate as follows:—In the mildest cases a natural relief is afforded, even when the disease has been fully developed, by a gradual absorption of the aphtha and the return of the turgid vessels to their natural condition, and this without the assistance of surgical treatment. In more severe cases, however, the morbid deposit continues to increase in size, until the conjunctival covering it gives way, and it is then washed away by lachrymal secretion, a slight abraded depression, indicating the seat of its former existence, the neighbouring vessels still continuing turgid with red blood, until the process of repair is complete, or nearly so; and it may be taken as a general rule,



that the nearer the aphtha is situated towards the centre of the cornea, the more protracted and troublesome will be the after-consequences, for the closer the connection of the membrane to subjacent textures, the greater will be the likelihood of ulceration following a breach of its surface.

#### TREATMENT.

When this disease occurs unmixed with any other morbid affection of the eye, the treatment is remarkably simple. You will generally find that the aphtha will disappear without ulceration or suppuration, and that the plexus of red vessels will return to their natural and former condition. But if neglected, and particularly when occurring in a strumous or cachectic subject, it almost invariably happens that ulcerative inflammation to a greater or less extent is set up, which extends beneath the spot to the subjacent cornea or anterior part of the sclerotic. Thus, from simple aphthous ophthalmia neglected, it is not at all uncommon to have a spreading ulcer of the cornea as a consequence. This, however, may be almost always prevented by the following treatment:—

First, with regard to the constitutional treatment. This, if the disorder be uncombined with any other affection of the organ, will be comprised in a few words. The general health is not necessarily in the

slightest degree affected by the local disease ; but as we usually find it occurring in weakly children, or constitutions which have suffered more or less from various causes of debility, it may be necessary in such cases to administer some form of tonic in the way of diet or medicine.

The different preparations of cascarilla, calumba, or bark, in combination with an alkali, more particularly ammonia, may be used with advantage, if judiciously given. In addition, an occasional purgative will be found highly beneficial ; but strict attention to proper regulation of diet cannot be too strongly insisted on. In these, and indeed in all cases of disease, tonic medicines should be avoided when tonic diet can be substituted. If the digestive organs are performing their healthy functions, and you meet with no disturbance in the nervous and vascular systems, further than that which debility alone will occasion, regulate the diet of your patient, instead of loading his stomach, as too many are in the habit of doing, with bulky tonic drugs. Tonics and stimulants, in the way of medicine, may certainly be required sometimes ; but not, I believe, as often as they are given, and they ought never to be employed in those cases where the different secretions from the body are vitiated or suppressed ; but with a natural appetite and healthy secretions from the alimentary canal, tonic medicines will be found more beneficial to the compounder than to the patient.

The local treatment is generally the most im-

portant, and will consist, in severe cases, viz. when the disease is attended with acute surrounding inflammation of the conjunctiva, and when the aphthæ are numerous,—in these cases it will consist in lessening action by topical bleeding, and by setting up counter irritation in the neighbourhood of the disease. We therefore apply leeches or eup on the temple. Blisters or issues afterwards may be necessary, only, however, in very severe cases, for generally an astringent collyrium will be sufficient to excite the vessels of the part to altered and healthy action. Various forms will answer equally well.

Either of the following formulæ will be found useful :—

R Liq. plumb. subacet. M. vj.

Aq. fontan. ʒ xiv.

Liq. Opii sedativ. vel Vini Opii ʒ ij.

M.

R Argent. Nit. vel Zinci Sulph. vel Cupri.

Sulphat. gr. ij.

Aq. fontan. ʒ x:

Vini Opii ʒ ij.

M.

The Vinum Opii or Liquor Opii Sedativus undiluted, are also beneficial as collyria, more particularly in chronic cases.

These may be varied according to the condition of the organ; and generally, by persevering in the application of local remedies, the disease will gra-

dually disappear. Pain and intolerance of light are frequently unfelt. In conclusion, I may remark that this disease is very likely to recur from exposure to cold or a disordered state of the digestive organs.

Whatever differences of opinion may exist respecting the term by which I have described this complaint, there can be none as regards the character of that which I have next to make you acquainted with, for no one can doubt for a moment that it is a true pustular disease, I mean

#### VARIOLOUS INFLAMMATION OF THE CONJUNCTIVA.

As you well know the prevalence of Small Pox in this country, you must be aware that this complaint will frequently be met with in your practice; and you will find that it is not only a very frequent, but a most intractable disorder, for even, if seen in the commencement, the constant attention, and the most judicious treatment on the part of the medical attendant are too often found to be utterly unavailing in checking its progress when occurring in its most severe forms, for then it inevitably terminates in total blindness. The degree of danger will be known by the situation of the pustules, or in the absence of any ocular demonstration by which this point can be determined, by the nature of the discharge which issues from closed and enormously swollen lids. Now, variolous eruptions may occur either on the conjunctiva of the lids only, or it may extend generally

over the whole surface of that membrane. When the lids only are affected, the disease may be considered in its milder form, and the damage sustained by subjacent and surrounding tissues is usually repaired without seriously interfering with the functions of those parts, upon the integrity of which the sense of vision depends; but when the pustules of small pox form on the conjunctiva of the cornea, the affected parts are always permanently damaged, and frequently the complete loss of sight is the result,—invariably so if those pustules are confluent.

To make the subject clear and concise, I must describe it under two heads:—first, referring to Variolous Ophthalmia as it affects the conjunctiva of the lids only; and, secondly, to the consequences which follow the extension of the irruptive disease over the whole surface of the membrane. In watching a case of small pox, we observe, as most of you must know, that during the eruptive stage the lids are swollen and closed, and in a short time matter exudes from behind them, and becomes encrusted on the palpebræ and eyelashes, agglutinating the lids and perfectly sealing the aperture between them. This swelling of the part arises from the formation of pustules on the subjacent conjunctiva, the surrounding tissues becoming inflamed as the eruption is becoming fully matured, and the purulent effusion, which occasions by its incrustation, adhesion, and closure of the palpebræ, is poured from the suppurating surfaces of the broken pustules beneath. When agglu-



tion is complete, the matter no longer finding an outlet for escape, is, together with the lachrymal secretions, which now increase in quantity, confined between the lids and the globe, where, until proper measures are adopted to evacuate and insure a free and constant outlet for the morbid discharge, it must of course, occasion and keep up continued irritation over its inclosing surface of inflamed mucous membrane. Additional suffering to the patient is necessarily the consequence of such a condition of the part. The symptoms complained of are sense of fulness, smarting pain, and burning heat, each increased by moving the globe in the orbit, or attempting to separate the lids. If these symptoms only, combined with the external indications I have alluded to, are the most severe and prominent features of the complaint, and more particularly if it is found that the commencement and progress of variolous disease in the membrane hidden from your view is, so far as you can judge, keeping pace with that which you can distinctly see in other mucous membranes and on the surface of the skin. If you see *pure pus* only discharging from the eyelids during the progress of the disease, and the swelling of the lids beginning to subside, with a diminished purulent secretion issuing between them, as a change concomitant with the alterations which take place in the pustules on the surface of the body, indicating the decline of the eruptive diseases,—in such cases, before you can separate the lids, and satisfy yourself



by so doing as to the precise condition of the globe, you may generally anticipate a favourable result, for general and perfect acute Variolous Ophthalmia is distinguished by far more severe suffering.

As the complaint is subsiding, the swelling gradually diminishes, and in a short time the lids can be again separated, and the globe of the eye distinctly seen. It will then be found, that if those symptoms only have been present which I have mentioned, and if the disease in the eye has kept pace with that on the skin in its progress and convalescence under such circumstances, it will be found that if the cornea has escaped, a perfect recovery will follow, for the sense of sight will not suffer in the slightest degree. A trace, however, of previous disease will be sometimes left, for the eyelids in the situation of the former pustules are sometimes disfigured by cicatrices, producing an uneven edge of the tarsus, which may remain for the rest of life. The cilia in many cases fall out, and are seldom restored. Trichiasis, or inversion of the eyelashes, is also a frequent consequence of variolous inflammation of the tarsal conjunctiva.

With regard to the subject of small pox generally, I do not think it necessary to enter upon it in my Lecture on Variolous Ophthalmia. I must presume that the local appearances of the disease on the skin, and the nature of the constitutional disturbance which accompanies it, together with a knowledge of its proper remedies, are already known to those whom I am now addressing. I shall, therefore, only describe

the local treatment, upon which, although you may consider it extremely simple and almost trivial, may nevertheless depend the favourable termination of the complaint.

Your object will be to prevent the occurrence of any increase of irritation in the inflamed mucous membrane, from the confinement of increased lachrymal secretion and purulent effusion behind the agglutinated and closed eyelids. This will be accomplished by frequent tepid ablutions of water or milk and water.

I have generally found the following collyrium, injected warm between the lids, extremely useful and grateful to the patient :—

R Aq. Ros. ʒ viiss.

Liq. plumb. subacet. M. xx.

Liq. Opii sedativ. ʒ ij.

M.

This, of course, can only be used after the incrustations have been removed, and a free passage established for the escape of the morbid secretions and injection of collyria. Remember that the greatest care must be taken to remove all incrustations from time to time ; and by the plan I have recommended, you will effect nearly all that local remedies can accomplish in the way of hastening a return of the diseased structures to their natural condition. Considerable relief is often afforded by puncturing the pustules of the affected parts.

Now, when instead of affecting the lids only, the

pustular irruption extends over the sclerotic and corneal conjunctiva, the disease becomes dangerous in the extreme. We have, in addition to the formation of pustules, an acute inflammation of the whole membrane, and this general and pustular inflammation constitutes acute Variolous Ophthalmia.

You will recollect that the swollen state of the lids will quite prevent you from ascertaining whether the lids only or the globe also have become affected. You will therefore ascertain the existence of acute Variolous Ophthalmia by the following symptoms:—Excessive lachrymal discharge, intolerance of light, even through the lids, pain on moving the globe in the orbit, continued pain, and sensation of sand or gravel between the lids. If you observe a bloody, greenish, offensive discharge, you may be sure the cornea is sloughing. These symptoms, then, indicating general and pustular inflammation of the external tunics, will lead you to anticipate the most serious possible consequences. The cause of danger in these cases must be obvious to you, when you consider that the disorder, as it affects the cornea, is precisely the same as when affecting the skin. In both cases, therefore, we have a small spot in which suppurative inflammation is set up, viz. a pustule. Ulceration follows, and sometimes sloughing; and wherever a pustule of small pox forms on the transparent cornea, on that spot opacity to a greater or less extent will be produced by the cicatrisation of the consequent ulcer. If, therefore, a pustule be

formed in the axis of vision, the functions of the organ will often be permanently disturbed or destroyed. If a small uleer only be formed, and consequently a small spot of opaeity be left, you will generally find that the sense of sight will be but little impaired. If a large superficial ulcer be formed by the pustules of confluent small pox, and that uleer leave behind it a cicatrix opposite to the pupil, the loss of sight is inevitable. If the disease be raging in its most virulent form, the sloughing process will form a large opening through the cornea, and allow the humours to escape. The globe in these cases will collapse, and, of course, the functions of the organ will be destroyed. If only a small ulcerated opening be produeed, you will find that instead of a general evacuation of the humours, the aqueous only will escape, the iris will be pushed through the aperture, and thus prolapsus of the iris will be the consequence. If, again, the opening through the ulcerated cornea be too minute to admit the passage of the iris, it is found that the iris, in consequence of the escape of the aqueous humour, is pushed against the ulcerated aperture in the cornea, to which it adheres without protruding; thus producing an alteration in the relative situation of the membrane, which is called *Synechia Anterior*.

Sometimes the layers of the cornea, having been thinned by superficial ulceration, give way, bulge out, and thus form a permanently opaque projection, which is known by the term of *Staphyloma*.



These being the symptoms and the occasional consequences of Variolous Ophthalmia in its most acute stages, we next come to the treatment.

From the description I have given of the local effects of small pox on the organ of vision, you will see that the most active and decided plan of general and local depletion is indicated. But it is well known that in small pox such a plan of treatment will in many cases be productive of the most pernicious consequences, from the effect which depletion will produce upon the diminished powers of the system.

In many cases, then, we have only to choose whether we shall attempt to save the organ of vision at the risk of destroying life, or whether we are to leave that organ to inevitable destruction by following those rules in practice, which have been proved by experience to exert the most beneficial influence upon the constitutional disease.

In the most acute forms of Variolous Ophthalmia, if the constitution will bear depletion, you will lose no time in an endeavour to check the progress of the disease by general bleeding—local bleeding—mercurial purgatives—warm ablutions,—to prevent agglutination, placing the patient in a well-ventilated room, excluded from light; for these are the means of remedy you must then first have recourse to. If, on the contrary, prostration of strength or other causes should forbid this plan, you will endeavour to effect your purpose by local bleeding and tepid ablu-

tions ; but in most of these cases the disease will have either damaged or destroyed the sight. Do not, however, mistake the common effects of small pox on the lids only for acute Variolous Ophthalmia. Do not bleed, either generally or locally, when the lids are only swollen and glued together, for this is the effect of pustular disease on the conjunctiva adjacent to the edges of the cilia ; but when, in addition to this swelling and agglutination, you find continued pain—intolerance through the lids—profuse lachrymation—sensation of sand between the lids—and excruciating pain on moving the globe within the orbit,—then rest assured that by depletion only the organ can be saved, for such are the symptoms of suppurative and ulcerative inflammation of the cornea, and of acute inflammation of other tunics. Thus your constitutional treatment in Variolous Ophthalmia must depend, not upon the urgency of the local symptoms, but upon the effect which the disease in other parts has made upon the system generally. Your local treatment in all cases will consist in local depletion and tepid ablutions.

From your knowledge of the commencement and progress of variolous pustular eruptions, you will, of course, conclude that the disease on the conjunctiva will keep pace with that on the skin, appearing at the same time and fading together. You may therefore be led to suppose, that when the pustules on the skin have formed incrustations, and those incrustations are falling or fallen off, that the conjunctiva



has escaped, and that all danger to the eye is at an end. This is not the case. It is a well-known fact, that at this period (viz. after two or three weeks) a pustular variolous eruption will every now and then occur on the conjunctiva of the globe. At this period, however, the disease in the eye will be of a much milder form, and will be characterised by the following symptoms. As the lids are not so much swollen, we can now see the cornea, the pustule on which will first show itself in the form of a small circumscribed opaque spot, surrounded by a hazy zone. We next find that the opaque spot increases in size, and forms in its centre a yellow speck. This central yellow speck or spot increases to form a perfect pustule.

If it should happen that several pustules form on the cornea at the same time, it will sometimes be difficult to distinguish the opaque spots separately; for their surrounding zones of hazy cornea will become mingled together to form a nebulous or clouded cornea. In these cases a minute examination will be necessary, to ascertain the exact nature of the disease. The other symptoms will be, as in the former case, redness of the conjunctiva of the sclerotic and lids—pain and intolerance of light. The disease, therefore, is the same in kind, but less in degree. Suppuration and ulceration are the most common consequences of the disease in this stage; the sloughing process rarely supervenes.

The treatment is the same as before; active and

continued general depletion, which the patient can generally bear after the decline of the irruptive fever—local depletion—tepid washes—and a shaded, cool, and well-aired apartment. Remember, that by neglecting to pursue a strictly antiphlogistic plan of treatment, this mild form of pustular variolous disease may be equally destructive with the acute form I first described.

#### CARCINOMA.

The next true disease of the conjunctiva which I shall describe to you, will be Schirrhus. Now, Carcinoma or Schirrhus is known to affect two of the component parts connected with the organ of vision, only, namely, the conjunctiva and the lachrymal gland. Fungus of the eye is common, but the globe of the eye is never the subject of true carcinoma, unless from the extension of the disease to that organ from other parts.

Carcinoma of the conjunctiva is an extremely rare disease; it appears in the form of tubercular enlargements, which are characterised by a truly schirrous hardness. It usually begins in the conjunctiva of the lids, extending to that of the globe. The surfaces of these tubercles become ulcerated and ragged, and an offensive ichorous discharge is poured out.

In a case which occurred a few years ago at St. Thomas's Hospital, this disease of the conjunctiva was combined with a similar affection of the lachrymal gland; the eye appeared shrunk and the humours

partly absorbed. The disease extended to the palpebra, and destroyed the life of the patient. This affection of the conjunctiva is always attended with acute lancinating pains and general cachexia.

The treatment of schirrous of the conjunctiva will consist, of course, in its entire removal by incision, by which, as in all cases of carcinoma, life is prolonged, but not eventually saved.

#### PURULENT OPHTHALMIA.

Purulent Ophthalmia has been divided into three distinct forms of disease,—Purulent Ophthalmia of infants — of adults — and Gonorrhœal Ophthalmia. This division is pathologically incorrect; for, by whatever cause it may be produced, Purulent Ophthalmia is essentially the same disease in all cases, and may be defined as a suppurative form of inflammation of the membrana conjunctiva; in which, whether it be produced by the contact of gonorrhœal matter, or any other exciting cause, the diagnosis and treatment will be the same, provided it occurs in subjects of about the same age and of similar constitutional diathesis, and unmixed with other indications of morbid disturbance. Now, although an objection may be offered to a pathological division of the disorder under three heads, yet this division must, for practical utility, be adopted, in giving a clear description of the symptoms and the different forms of remedy which will be required under the various cir-

cumstances which are found to modify the general character of the complaint: first, of

#### PURULENT OPHTHALMIA IN INFANTS.

When a child is shown to you under a week old, and you are told that the infant has taken a cold in its eye,—when you find the lids reddened at the edges and corners,—when, moreover, you find that those lids are glued together by inspissated secretion, and that the child shuns the light,—you may be certain that the little patient is the subject of this disease. Raise the upper eyelid, and you will find the inner surface red and villous. After this you can have no doubts as to the nature of the disease, for these are the first symptoms of Purulent Ophthalmia in infants, viz. redness of the edges of the lids—intolerance of light—agglutination of the lids from morbid secretion of the conjunctiva—and a scarlet redness of the palpebral conjunctiva. The disease usually appears from the third to the fifth day after birth, and is always produced by the contact of the conjunctiva with a gonorrhœal, a leucorrhœal, or some other morbid discharge from the vagina of the mother during parturition.

Thus Purulent Ophthalmia in infants commences in the form of acute suppurative inflammation of the conjunctiva lining the eyelids, and is quite unconnected at first with any disease of the globe itself. We rarely see the disease at this early stage, for the symptoms are generally in the first instance attri-



buted by the parent to a wrong cause, and are consequently overlooked or neglected.

It is generally in the second stage of the disease that we are applied to for advice, and very generally when medical aid is no longer available in saving the organ from inevitable destruction. In the second stage of the disorder the severity of the symptoms is increased ten fold. The disease will have extended to the conjunctiva of the globe, which presents a swollen and bright red appearance. The eyelids (and particularly the upper) become distended and discoloured by acute inflammation set up in their cellular membranous coverings, and a profuse discharge of pus is poured from the inflamed conjunctival surfaces over the face and linen of the child.

This purulent effusion becoming inspissated, glues the lids together, sometimes so completely as to prevent an external outlet to the secretion, which, of course, consequently collects under the lids between them and the globe.

The colour of the discharge is usually yellow ; but, in the most aggravated forms of the complaint, it is of a greenish yellow, sometimes mixed with blood.

At this period of the disease, the orbicularis palpebrarum is strongly and constantly contracted, so that an exposure of the globe is with difficulty effected by a separation of the eyelids. Now, the mode of separating the lids of a child, the subject of this disease, and the mode of performing the same

operation in other diseases of the organ, and on the adult subject are totally different.

In many other diseases it is desirable that the inflammation of the conjunctiva should not be increased by any violence done to the part in an attempt to open the eye by artificial means, and therefore I pointed out the best mode of doing so in a former lecture. But in Purulent Ophthalmia of infants it will be quite impossible to effect your purpose in the way I then recommended. The conjunctiva is swollen and villous. You find chemosis of lids, and a cornea hid by protruding chemosis of membrane.

The best mode of exposing the globe will be by separating the lids quickly during the time the child is asleep; but it does not always happen that we are able to choose such a time for the operation, therefore another course of proceeding must be adopted. It consists in pressing the margins of the tarsi backwards over the globe, by placing the finger-nails against their anterior edges. No force is to be used—no pressure *downwards*—the finger-nails are not to be *hooked* under the lids, but placed against the anterior edges of the lids—which are to be separated by gentle pressure—the introduction of probes between the lids may sometimes be required to effect your object, or the use of a speculum oculi (see Pl. 16), if from the tumid state of the part, or the irritability of the child, or any other cause, greater force is required than can be exerted by the finger only; often, however, we must rest satisfied in our



diagnosis by the presence of other symptoms, viz. with the degree of tumefaction in the lids, and the character of the purulent discharge issuing from beneath them.

In the second stage of the disease which I am describing, if the inflammatory action be not checked, the conjunctiva of the sclerotic becomes raised and inflamed, to form chemosis on the globe, the cornea becomes hazy, opaque, and sloughing, and ulceration speedily follows. A sloughing ulcer may be either superficial, or it may extend completely through the tunic, in the one case producing a white depression with ragged edges on the surface of the cornea; in the other case allowing a free escape of the aqueous humour through an aperture which is left after the separation of the slough. When the iris is pushed through and protrudes externally, occasioning prolapsus iridis, a partial escape of the vitreous humour follows, and consequently the globe collapses more or less within the orbit. In some cases where there is neither slough nor ulceration of the cornea, it will be observed that adhesions take place between the inflamed tunic and the iris. Partial adhesion between the cornea and the iris is one of the common consequences of Purulent Ophthalmia.

These are the changes of the second stage, during which, if a slough or large ulcer has actually formed on the cornea, the eye may be considered as lost; if merely superficial inflammation, producing hazy



opacity, has taken place, you may frequently succeed in saving the organ.

With respect to the appearances presented by a slough or an ulcer of the cornea, I shall enter more particularly upon this point in speaking of the diseases of that tunic. In the mean time Plates 4 and 5 will convey a general idea of the appearance of this morbid action in the part.

The appearances presented by a prolapsed iris are represented in Plate 2.

The third stage may be considered as the convalescent stage ; for as in Gonorrhœa, so in Purulent Ophthalmia, we find that after suppurative inflammation has run a certain course, the disease wears itself out and gradually subsides, and if in the latter case uncontrolled during this course by proper remedies, the extension of the disease to the parts already mentioned will almost invariably destroy the organ. In this third stage the swelling of the lids decreases, the discharge is lessened, and intolerance diminished, and the child begins gradually to open its eyes. We can now, therefore, distinctly observe the extent of the mischief which previous active inflammation has occasioned, — whether opacity, or ulceration, or slough, of the cornea and prolapsus of the iris, and according to different circumstances your treatment will be as follows :—Your object will be to lessen vascular action by depletion in the first instance, and afterwards to excite the vessels of the inflamed and suppurating part to an altered and healthy per-

formance of their proper functions. If, then, you are called to a case of this kind, and find that the complaint is only just at its commencement, your local treatment will have in view the prevention of subsequent acute suppurative inflammation, by the following means :—

In the first place the eye should be frequently bathed in warm water, to prevent any agglutination of the lids or collection of pus beneath them. This is a point of material consequence, from neglecting which the lids become frequently glued together, and the pressure of an accumulation of pus will thus excite constant irritation, and a frequent observation of the condition of the part will be rendered difficult to the surgeon and painful to the patient.

In the next place we endeavour to alter the action of the suppurating exhalent vessels by an astringent local application. This we apply in the form of a wash or collyrium. Different forms of collyria have been recommended, and each may perhaps answer the purpose, viz. either Zinci sulph., Alum, Cupri Sulphat., or Argent. Nitrat., in the proportion of one grain to an ounce of Aq. Ros. Either of these injections should be used three or four times in the course of the day, being thrown between the lids and the globe, by means of a bone or ivory syringe. A piece of linen dipped in a saturnine lotion may be constantly applied to the eye. In this will be comprised your local treatment in mild incipient cases of Purulent Ophthalmia in children.

The constitution will have suffered but little, if at all, and you will therefore have merely to keep the bowels regular by appropriate means.

As it rarely happens that we see the disease in infants in the earliest stages, so it seldom happens that the plan of treatment which I have now described will be sufficient for the cure of the disease, which we generally see in the second stage, when the lids are swelled and acute inflammation is set up in the part.

Now, when you are called to a case of this kind, your prognosis will be as follows :—If you observe a bloody ichorous offensive discharge issuing from the eyelids, you may, without further inquiry, pronounce at once that the functions of the organ will be either seriously disturbed, or completely and permanently destroyed. That ichorous sanious discharge is produced in these cases by one cause, and by one cause only, viz. slough of cornea; and a sloughing of any large portion of the cornea in Purulent Ophthalmia of infants may be considered as synonymous with a total destruction of the organ. If, before you separate the lids, you perceive a deep yellow or a greenish yellow discharge, you will know that very acute inflammation is existing in the part. If the discharge be whitish, that white appearance will indicate a less degree of inflammation; and, if not preceded by a yellow effusion, you will generally find that the case will terminate favourably. But the only satisfactory evidence upon which you can found



a correct prognosis will be afforded by an examination of the globe of the eye itself. When the cornea is clear and transparent, you may at once assure the parents that the organ is, in all probability, safe. The disease is then usually completely under your controul. Whatever may be the condition of the sclerotic or palpebral conjunctiva, if the cornea is free from disease, the sight may be almost always restored. A hazy appearance of the cornea is not always an indication of an unfavourable result, for if the semi-transparent dulness of the membrane be only superficial—if merely confined to the conjunctiva of the cornea and its anterior layers—that haze will disappear under proper treatment. If the cornea should be perfectly opaque, ulceration or slough, to a greater or less extent, will follow, and consequently the eye will necessarily be damaged. These, then, will be the rules to guide you in giving a prognosis.

With regard to the treatment of Purulent Ophthalmia in its acute form or second stage. This will be comprised in a very few words, for it is extremely simple. It consists in local depletion, the application of saturnine lotions, and tepid fomentations, and in the occasional exhibition of mild purgatives, of the ingredients composing which some mercurial preparation should form a part.

When you consider the peculiar constitution of your little patient, you will see the necessity for considerable caution in having recourse to blood-



letting as a means of remedy. The application of even one leech to the upper swollen eyelid will be quite sufficient for your purpose; for the effect produced upon the system of an infant by the abstraction of blood from a single leech-bite is sometimes powerful in the extreme. It is possible that it may be necessary to repeat the application; but generally a repetition is not called for.

The dose of mercury required for the purpose of acting upon the bowels of an infant within the month should never exceed in strength that of one grain of calomel. This may be repeated, if necessary.

By these means, together with the injection of tepid water beneath the lids, and the application of a piece of linen dipped in a saturnine lotion to the part, you will find that in a day or two the swelling in the palpebræ will be diminished, and that other symptoms of acute inflammation begin to decline. If such, however, should not be the case, local depletion must be continued. This, however, is rarely necessary, the first bleeding being almost always sufficient to reduce the disease to a chronic form. When this is the case, viz. when you find the purulent discharge diminished and the swelling subsiding—when you find the child is able to bear the stimulus of light—you then alter your plan of depletion for one which I have already described, namely, the local application of astringents, and the case is then to be treated in the way which I have before pointed out as applicable to the first stage of the disease. Thus you

diminish acute inflammation in the first instance by depletion, and afterwards excite the suppurating surfaces to altered action by astringents.

In the third stage of the disease, when acute inflammation has ceased, and when the process of restoration is taking place, it will occasionally be found necessary to support the system by tonics; for you will sometimes meet with a ragged flocculent ulcer on the cornea, as a consequence of previous disease, which ulcer, indicating a disposition to slough, will require, like a sloughing ulcer on other parts, and in a debilitated constitution, the exhibition of tonic constitutional remedies.

A chronic thickening of the lids will every now and then remain for months after the other symptoms have disappeared; this however rarely occasions any inconvenience. Both eyes are not generally affected together, two or three days elapsing between the appearance of disease in each.

The cause of this disease in infants I have already mentioned; but in some cases the existence of a morbid secretion from the vagina will be denied by the mother; yet in all cases you may rest assured that it does exist. In conclusion, I have only to add, that blisters are, in my opinion, in any stage of the complaint, worse than useless. The analogy between this complaint and gonorrhœa must be obvious to every one who has seen the two diseases.

## OF PURULENT OPHTHALMIA IN ADULTS.

Purulent Ophthalmia in adults, although essentially the same disease, will require a separate description ; for, in infancy, we must trust to the evidence afforded by ocular demonstration, whereas in after-age various concomitant symptoms are described and complained of, the existence of which, in the former case, must, of course, be concealed from us ; and, again, in Purulent Ophthalmia of adults, depletion to a much greater extent will be required.

First, with regard to the causes of Purulent Ophthalmia in adults. You will find that a very great difference of opinion prevails amongst medical men upon this point. By some it is supposed that Purulent Ophthalmia, like Gonorrhœa, is generally produced by the contact of pus with the mucous membrane. By others, again, it is considered that ordinary causes of disease may give rise to this disorder, and that it is not consequently what is usually called a specific disease, viz. a disease produced by the impression made upon the part by a poison. It is not doubted by any one that gonorrhœal matter introduced into the eye is capable of producing this complaint ; but the point at issue appears to be, whether other and more common causes of disease may not produce the same effect. The solution of this problem is not of very great practical importance, since we all agree that the disease once pro-

duced is contagious, viz. communicable by contact, and therefore we all agree in the propriety of observing those precautions which are necessary in cases of other diseases communicable by similar means. Whatever, therefore, may be the cause of Purulent Ophthalmia, you will be careful to inform the attendants of your patient of the dangerous consequences of, in any way, allowing the discharge from the suppurating eye to come in contact with their own; for, once produced, the disease is of a highly contagious nature. That peculiar states of the atmosphere are favourable to the production and continuance of the disorder, is, I believe, well known.

The symptoms of the complaint in grown persons will be as follows:—

As in infants, so in adults, there are three stages—

1st stage, When the disease commences.

2nd stage, When at its height.

3rd stage, When the disease is wearing or has worn itself out, and the patient may be considered as convalescent.

In the first stage the lids only are affected. The symptoms, therefore, will be redness, from increased vascularity of the palpebral conjunctiva, whitish muco-purulent discharge, small in quantity. Another symptom is stiffness of the lids, and a sensation of some extraneous substance between them.

In the second stage of the disease inflammation is violent and rapid in its progress. Thus when the

whole surface of the conjunctival membrane has become affected, the inflammatory effusion of serum and adhesive matter into its cellular connections will produce a degree of chemosis and a general swelling of the common integuments of the lids, which will render it altogether impracticable to separate the parts, so as to obtain a view of the globe behind them.

In severe cases of Purulent Ophthalmia in adults, as well as in infants, it is frequently quite impossible to determine the condition of the globe, and consequently the prognosis must be, to a certain extent, founded on conjecture ; for, as we are unable to see the cornea, we are of course unable to determine to a certainty how far previous disease may have been carried beyond the reach of our remedies.

In the milder forms of the complaint in adults, you may sometimes be able to separate the lids so as to observe the effects of the disease upon the globe ; but in severe cases, and particularly in that form which is produced by gonorrhœa, this will usually be quite impracticable. The discharge of pus will be profuse in the extreme, streaming from the eye upon the face and even upon clothes. The colour of that discharge will be an excellent diagnostic guide : if sanious and offensive, dark yellowish green, and thin, slough will have taken place ; if yellow or white, a less degree of inflammation will have occurred, and possibly the cornea may have escaped permanent damage.



In the absence of ocular demonstration, these diagnostic symptoms will form a good ground for conjecture respecting the probable condition of the cornea and other tunics.

In the more severe cases of Purulent Ophthalmia in adults, excessive and agonizing pain is complained of in the globe of the eye, the orbit, and over the whole of the head. Now, you will be surprised when I tell you, that in many of the severest forms of Purulent Ophthalmia, viz. in those produced by the inoculation of gonorrhœal matter—that in cases where we have enormous swelling, discolouration, and protrusion of the lids, profuse discharge of pus, and even slough of the cornea, we have not the slightest indication of constitutional disturbance as an immediate and necessary consequence.

Purulent Ophthalmia in adults, as in children, is purely a local disease—a suppurative and acute inflammation of a mucous membrane—and bears a close resemblance in every one of its characteristic marks, to the same disease in the urethra. Purulent Ophthalmia and suppurative inflammation of the urethra are both produced in their severest forms by the application of a venereal discharge to the part. In both, the degree of inflammatory action is indicated by the same appearances in the character and consistence of the discharge; and in both membranes a milder form of disease is produced by various exciting causes.

In our treatment we are guided by the same gene-

ral principles, and have precisely the same object in view ; for in both cases we endeavour to lessen acute inflammatory action by depletion in the first instance, and afterwards to produce altered action in the capillaries by astringents. The different nature of the surrounding textures renders it necessary to vary the degree, but not the kind of active treatment in the two cases, the textures beneath the conjunctiva being much more readily disorganised by inflammatory action than the surrounding investments of the urethra.

The treatment, then, in acute Purulent Ophthalmia in adults, will be as follows :—It will vary very considerably from the treatment of the disease in children. I told you that in infants you might in the very first stage, viz. before the lids became swollen, and when the disease was confined to the conjunctiva of the lids,—I told you that in such cases you might frequently arrest the progress of the disease by astringent injections ; but, in the adult, you must never for one moment think of making such an attempt, for the disease being less tractable, will still continue to maintain an acutely inflammatory character, unless controlled by other means.

You will not be able, then, in the adult, to excite the suppurating exhalents to altered and healthy action in the first instance by astringents, and you will consequently find that local irritation is increased by the attempt ; for the stimulus of an injection will

add, in such cases, to the high degree of inflammatory action which is already set up.

In adults, then, when you find a slight discharge, inflamed lids, and a sound globe, your prognosis and treatment will be as follows :—If your patient is of a sound and healthy constitution—if temperate in living—and if the disease be communicated by some other person who is the subject of the disorder in a mild form; or if, indeed, it can be shown that it is not from the poison of gonorrhœal matter, you may very generally prognosticate the successful result of your treatment. But if, on the contrary, the venereal discharge of gonorrhœa be the exciting cause—if it be Gonorrhœal Ophthalmia, you must be guarded in your prognosis. I assure you that even in the very first stage of Gonorrhœal Ophthalmia the most active and judicious plan of treatment will in some cases entirely fail to check the progress of the disease.

Gonorrhœal Ophthalmia generally occurs in one eye only. Occasionally both become affected. Then the second suffers less than the first. In the prognosis of Gonorrhœal Ophthalmia, then, you will give a guarded opinion, for the disease is not always under your controul. In other cases, if the disease be taken in time, you will generally be justified in giving a favourable prognosis.

With regard to the treatment, it will consist in active and continued depletion. In infants of a week old, a single leech to the eyelid will generally be sufficient; in adults we not only abstract blood gene-

rally, but we also call in the assistance of every other powerful means of lessening action and lowering the powers of the system.

In suppurative inflammation of the conjunctiva, then, where you have purulent discharge and inflamed lids, even although the globe be perfectly sound, you must bleed largely from the arm. You are not to think of abstracting any precise quantity of blood—the effect must be your guide, and not the quantity taken. If in acute Purulent Ophthalmia you intend to save the organ, you must bleed your patient in the first instance until the pulse sinks, and the powers of the system are lowered, until syncope is produced.

You are to recollect that the system has not in these cases sympathised with the local disease; you are not therefore to consider that when a pulse is beginning to become feeble and soft from venesection, that you are to desist; it is your object not to bring an excited, nervous, and vascular system down to the natural standard of health; but it will be your endeavour to produce in the first instance extreme depression of vascular action, far below the natural standard of health, and throughout the whole vascular system, and thus to diminish action in the capillary vessels of the inflamed surfaces, which, as you know, form a part of that system.

The next part of your treatment will consist in freely clearing the alimentary canal, and in exciting to increased action the secreting surfaces of



abdominal viscera, and in acting freely upon the cutaneous exhalents. You therefore administer the most powerful purgative and diaphoretic medicines. Calomel, combined with some other active purgative, will be found the most useful form of medicine ; but of whatever purgative you give, let calomel form a large proportion. Having thus further lowered the powers and action of the vascular system, by establishing a large demand for a supply of blood in the secreting extremities of the capillary vessels of the intestines, and having at the same time removed, by purgatives, all alimentary matter in the stomach and bowels, from which a fresh supply of nourishment may be afforded by the lacteals, we next proceed, in our constitutional treatment, to insure a continuance of that depression in the system which profuse bleeding and active purgatives have already produced. Now, it must be manifest to the most superficial observer, that the frequent repetition of the large abstraction of blood which I have recommended in the first instance, must in a few days be attended by dangerous, if not by fatal consequences — the patient would be a victim to hæmorrhage ; yet, in some cases of acute Purulent Ophthalmia, it will be necessary to depress the powers and action of the nervous and vascular systems throughout the continuance of the local disease, to produce a degree of depression very little short of that which is occasioned by profuse and continued hæmorrhage. This will in most cases be accomplished by the exhibition of those medicines



which produce a nauseating effect. By keeping up a state of continued nausea, then (by the use of antimonials or ipecacuanha), you next endeavour to controul excessive inflammatory action. Your reason for adopting this plan of treatment will be as follows :—We all know from personal and very painful experience, some of the most remarkable consequences of nausea. We find that a continuance of severe nausea will produce a prostration of strength, both physical and moral, which is too well known and too frequently felt to need description. There may, perhaps, be some present who, when they have seen the effect of nausea in lessening the power of resistance in muscular fibre, in cases where this plan of treatment has been adopted as a preliminary step to the reduction of a dislocation ; or who, when deprived themselves by the same cause, of that energy of mind and body which they had previously enjoyed ; there may, perhaps, be some who have formed their ideas of the effects of nausea upon the system, solely from its more sensible and more apparent consequences. I think it therefore right to mention in this place that when we exhibit antimonial preparations in acute inflammatory disease with a view of keeping up a constant state of nausea, and thereby lessening the exciting disorder—we do so with a view, not only of acting upon the stomach, but with a view of acting at the same time, through the medium of the stomach, upon the whole range of the nervous and vascular systems ; for when this powerful impression

is made upon the organ, the nervous connection or sympathy naturally existing between the stomach and the sensorium will convey an impression to the brain and nerves, by which not only the powers of our voluntary muscles, but those of the vascular system also throughout the whole body are diminished and depressed.

It is by thus diminishing arterial action in the circulating system, that a continuance of nausea exerts its influence over the vessels of an inflamed part.

The vital powers of the whole system are for a time depressed, and consequently the tendency to increased action in any part is materially diminished. Thus, in those cases of acute Purulent Ophthalmia in adults, where the system has been drained by venesection, and where the safety of the organ is still threatened, you will find a very marked benefit from the plan of treatment I have recommended. The repetition of general bleeding will in many cases be required; but in some instances the patient, from various causes, may be unable to bear a second or repeated general bleedings, we must, then, trust almost entirely to the other means I have mentioned. Well, these are the first constitutional remedies to be adopted, viz., copious bleeding, calomel purgatives, keeping up continued nausea, and depleting locally.

Now and then, for instance, where your patient

may be the subject of phthisis, or convalescent from fever, or any other debilitating disease, very active general depletion may prove fatal, and we are consequently obliged to rely upon local remedies, and upon a milder plan of constitutional treatment; and if the disease be in its mildest form, you may, perhaps, occasionally succeed by such means in saving the organ. But if characterized by its severest symptoms, you may rest assured that the case is almost hopeless; for the remedy for the local disease would be attended by danger to life.

We next come to the local means of relief; this will consist in freely applying leeches to the lids, and in constantly bathing their inflamed surfaces with warm poppy fomentations, injecting at the same time, tepid anodyne collyria. The patient must be placed in a cool, well-aired apartment; for a close room and impure air will greatly tend to increase the existing disease. By this plan of treatment, we may hope, in almost all cases, (if seen at an early period) to check the disease; and if such should be the case, if it is found that no disposition to increased swelling in the lids exists, and that the discharge is lessening, you may begin with the use of an astringent injection; but you must still continue the depleting system as regards diet, and watch most narrowly for a recurrence of increasing inflammatory action, when of course a system of general depletion will be found necessary.

Redness and swelling of the lids will continue, after every other symptom has yielded, but this will be

removed by scarifying the part, and continuing the astringent wash. When all discharge has quite ceased, and not before, the patient may return to his usual habits of living. In this will be comprised the constitutional and local treatment of Purulent Ophthalmia in adults; and it will of course, appear to you, that the activity of the depleting plan, I have recommended, is quite uncalled for by the apparent urgencies of the disease. It may appear an extraordinary practice, when a person applies to you with slight redness of the lids, and purulent discharge, with no constitutional disturbance, to bleed that person, even till he faints, and afterwards to keep him for days in a horrible state of nausea. But when you know the ordinary progress of the disease,—when you witness the violence of the symptoms in its second stage,—and the intractable nature of the complaint in adults, you will at once be convinced of the absolute necessity for a plan of treatment, which will safely cut the disease short at once. Rest assured, that the safest plan is that which I have recommended to you; trust not to local bleeding and purgatives in *acute* Purulent Ophthalmia, but even before the conjunctiva of the globe becomes affected, bleed largely in the first instance, and, if necessary afterwards, do not spare the lancet if your patient will bear general depletion; nor forget the assistance you may derive from nauseating remedies.

We next come to the consequences and the treat-



ment of a more advanced stage. Now, as it very frequently happens, that we are quite prevented from obtaining a sight of the cornea by the enormous swelling of the lids, and chemosis of the conjunctiva ; so we are in those cases, obliged to form our diagnosis, and frame our plan of treatment upon general symptoms ; and unless there be direct evidence in the nature of the discharge, that sloughing has taken place, it will be right to presume, that the organ is within the reach of appropriate remedies.

If the cornea has sloughed, there can be no necessity for active depletion, for no plan of treatment can possibly restore the organ to its natural functions. When such has been the case, our only object will be to relieve local suffering by topical bleeding ; or, if necessary, by general bleeding and anodyne fomentations. But, if you have no good reason to believe that the transparent cornea is permanently damaged, you will be justified in adopting as in the first stage, the most active and vigorous plan of depletion ; for you have now to lessen in a few hours, by proper means, a degree of inflammatory action, which you might perhaps in an earlier stage of the disease have prevented.

If the disease be not checked at an early period, it will rarely happen that the organ can be perfectly preserved ; therefore, bleeding, and every other means of lessening action must be had recourse to, whilst there is a reasonable hope of saving the cornea entire ; and the quantity of blood which you are to



abstract, and the extent of depletion is to be regulated as in the first stage, by the effect, and not by formal rules of practice. In the course of a short time you will be able to separate the lids, and ascertain the condition of the globe; should it then be unequivocally manifest that the transparency of the cornea is permanently lost from ulceration or slough, it will be worse than useless to persevere in lowering the system, for you will be inducing debility for no possible good purpose. Local depletion will be sufficient to mitigate local suffering, until the convalescent stage of the disease shall supervene; when the ravages of previous disease will probably be found to have obliterated for ever every vestige of visible transparency in the globe. But, if a portion of transparent cornea in the axis of vision, be exposed under the swollen lids, you will still have occasion to continue your system of depletion, to prevent surrounding inflammation from spreading over the whole of that part.

In such cases, there is a hope of a partial recovery, even although the cornea may be ulcerated, or a small slough formed in other parts. In all probability, however, the organ, although saved, will be damaged very considerably; still where one eye is lost, even a *damaged* eye may be considered a blessing. The treatment, therefore, of the more advanced stage, where there is a prospect of saving the organ, will be similar to that which I have recommended as proper in the first. You may begin your astringent

injections as soon as the bright redness of the conjunctiva begins to fade, and when the swelling of the lids has begun sensibly to diminish; long, therefore, before the lids have returned to their natural dimensions: the nitrate of silver, either in solution as a collyrium, or applied pure to any ulcer of an unhealthy character, will be found extremely useful.

We next have to consider the treatment of the last, or convalescent stage of this disorder in the adult; this will be comprised in a very few words. When inflammatory action is subsiding, we have rather to expect symptoms of collapse, than the re-appearance of increased vascular excitement in the part: thus active depletion will hardly ever be required after the former stages of the disease have fairly passed over.

It is true, that during the convalescent stage, excess or intemperance may again produce active inflammatory action; but this is the result of an artificial stimulus. The natural action in the part will tend to the reproduction and repair of previously injured textures; and a want of power to repair, rather than an excess of action will be met with. During the convalescent stage then, the injection of mildly astringent washes will be the only local treatment necessary for the still suppurating surfaces of the conjunctiva. The constitutional treatment will consist in establishing, or preserving a healthy condition of the chylopoietic viscera, and of the secretions generally; and in avoiding all

stimulating causes of excessive vascular or nervous excitement; blisters to the temple in the chronic form may be required. In this, then, will be comprised the general treatment necessary in cases of Purulent Ophthalmia in adults.

I have already described the treatment of this disease in infants, and you will see that although the measures necessary to arrest the progress of morbid action are different in the two cases, yet, that the principle and main object is the same in both; depletion being first required to lessen excessive inflammation, and astringents being subsequently used to excite the morbid parts to healthy action. Excessive depletion both local and general being necessary in adults, the application of a single leech to the eyelid being sufficient in infants under a week old; at the different intervening periods between the ages of infancy and puberty, of course a corresponding difference must be observed in the treatment. Thus you will generally find, that at the age of three or four, five or six leeches, applied to the temples, will be sufficient; it is rarely necessary to abstract blood from the arm in very young persons, local bleeding will in most of these cases be sufficient. Your own judgment will teach you to vary your treatment according to the age and condition of the patient; it is of course impossible to lay down general rules which will apply to all individuals of all ages. Purulent Ophthalmia in adults will frequently be subject to relapse; therefore, when a patient has recovered from one attack, you

will of course make him acquainted with the probability of a second. Months may elapse between the two, and the second attack is usually less severe than the first.

Purulent Ophthalmia occasions blindness from the extension of the disease from the conjunctiva to the cornea and humours, which produces destruction of the organ. Thus, in cases of blindness from this disease, we find that ulceration and slough of the cornea, have been, strictly speaking, the main causes of the loss of sight, unless acute inflammation of other parts has supervened; and we, therefore, see opacity of the cornea, partial or general, in the situation of a former ulcer, and the degree and extent of the opacity will depend upon the size of a previous ulcer.

In addition to opacity, we occasionally see that the cornea having been thinned by ulceration of its luminæ, will yield to pressure from behind, and bulge forwards, thus forming what is called staphyloma. Sometimes when a slough has completely perforated the cornea, the iris is pushed through the aperture, to which it afterwards adheres. Adhesion of the iris to the cornea, is a condition of parts known by the name of synechia anterior, and amongst the common consequences of the complaint, generally following from the evacuation of the anterior chamber, and the consequent approximation and contact of the two coats, viz., the iris and cornea; this does not interfere with vision, provided no opacity exists in the



axis of vision, and the pupillary aperture is clear. Occasionally, opacity of the cornea is produced after the convalescent stage, by the accession of inflammatory action from thickened and granular lids. This must always arise from neglect; for a chronic thickening of the lids may always be prevented from damaging the globe.

A curious remedy in cases of Purulent Ophthalmia has been recommended by German oculists in Gonorrhœal Ophthalmia. They consider that the disease arises from metastasis, and that consequently suppurative inflammation of the urethra has been transferred to produce suppurative inflammation of the conjunctiva.

In cases of Purulent Ophthalmia produced by Gonorrhœal matter, they recommend that the disease should be re-established in its original situation by inoculation; bougies are to be passed; fomentations are to be applied to the perinæum, &c. Both the theory and practice are absurd. Gonorrhœa and Purulent Ophthalmia are often both existing together. The idea is too ridiculous to deserve further notice. Purulent Gonorrhœal Ophthalmia is produced by contact, and not in any case by what is usually called *Metastasis*.

Let me remind you gentlemen, of the absolute necessity for the strict observance of those rules, by which you may prevent the contagion from spreading, as well in this, as in every other disease which is propagated by infectious contact. As medical



advisers in public institutions, where Purulent Ophthalmia becomes prevalent, take care that you insist upon the infected being entirely excluded from all communication with the healthy. Let the linen be washed in separate vessels; and even during the convalescent stages be careful to avoid, and guard against, even the possibility of any contact of the secretions from the conjunctival membrane of the convalescent, with that of the healthy inmate. The prevention of disease is better than the cure; and, therefore, you will of course pay particular attention to these precautions. Your patients will, under these circumstances, be often benefitted by a change of air, and separation from one another; and a thorough cleansing of their habitations, will frequently assist in checking the spread of the disease, which appears under peculiar circumstances to be epidemic.

Now, when I began these lectures, I told you that I should be able to prove, that Ophthalmic surgery and general surgery, were essentially one and the same science. That for every disease of the constituent parts of the eye, I could show you an analogous disease in other parts of the body, where we meet with similar structures. I have shown you that Catarrhal Ophthalmia, is merely the development of that morbid action in the conjunctiva, which we every day are in the habit of witnessing in the schneiderean membrane, fauces, trachea, and larynx.

I have now to prove to you, that for Purulent Ophthalmia, I can find an analogous disease in other mucous membranes. I shall instance the mucous membrane lining the urethra, and that lining the antrum maxilare. In the first stages of Gonorrhœa, and in the inflammatory stages of abscess in the antrum, you deplete to reduce excessive inflammation. In Gonorrhœa an astringent injection will afterwards excite the suppurating surfaces to healthy action. In abscess of the antrum after having reduced inflammation, and established a free outlet for all purulent accumulation, by extracting a tooth and perforating the cavity, we use astringents for the same purpose, namely, for the purpose of altering the condition and action of the capillary system, by which means, a natural instead of a morbid secretion is produced. You are not to suppose that injections in cases of abscess of the antrum, are made use of with the same object in view as in cases of abscess in other parts. An abscess of the antrum is an accumulation of pus, which is collected in a cavity lined by an unabridged mucous membrane, and though we call it abscess in the antrum, the term is misapplied. When we inject a common sinuous abscess, we do so with the view of stimulating the sides of the cavity to granulate. When we inject an antrum, our object will be precisely the same as in cases of Gonorrhœa and Purulent Ophthalmia, namely, the excitement of the suppurating exhalents to altered and healthy action.

In each case, then, the early injection of astringents during the inflammatory stage will be injurious, and in all cases the treatment of Gonorrhœa, of Abscess of Antrum, and of Purulent Ophthalmia, will be guided by the same object; and consequently the analogy between suppurative inflammation of the conjunctiva, and suppurative inflammation of other mucous membranes, is perfect as well as it regards the sensible effects, as the necessary treatment.

In concluding the subject of Purulent Ophthalmia, I may observe, that a modification of this disorder is sometimes known to occur in gouty or rheumatic patients, this is called Arthritic Ophthalmia, or Arthritic Conjunctivitis. Rheumatic inflammation of the eye differs from every form of Purulent Ophthalmia, in being from the commencement a compound disease. In common Purulent Ophthalmia, the conjunctiva is the first seat of disease, and other tunics become affected from continuous inflammation. In Rheumatic Purulent Ophthalmia, the iris and sclerotic are almost always, more or less inflamed from the commencement to the termination. In this disease it is usual to find, that gouty or rheumatic inflammation of some of the joints will alternate with the complaint in the eye; thus, after having made but little impression by your remedies, the suppurative inflammation of the conjunctiva, and the deep-seated inflammation of the iris and sclerotic will suddenly subside, and your patient will as suddenly suffer from a transfer of the disease to some other part. He

will, perhaps, be laid up by gout or rheumatism in the joints of his extremities ; and during the continuance of the disease in these parts, the eye will recover its natural condition.

Rheumatic inflammation of the conjunctiva then is a compound disorder, consisting in a modified form of Purulent Ophthalmia, in combination with common arthritic inflammation of the deep-seated tunics. As I shall hereafter have occasion to describe particularly the symptoms and treatment of rheumatic inflammation of the iris and sclerotic, I do not think it necessary to notice them more particularly at present. I have, therefore, only to observe, that when combined, as I have before said, with suppurative inflammation of the conjunctiva, the same treatment will be required as in cases of mild Purulent Ophthalmia. A moderate degree of general and local depletion will usually be sufficient to remove the complaint. Astringent anodyne injections, or collyria are to be used during the chronic stage of the complaint. The conjunctiva is not the only mucous membrane affected ; occasionally a muco-purulent gleety discharge is at the same time set up in the urethra : which, like that of the conjunctiva, disappears when the disease is developed in the joints or other parts.



## STRUMOUS OPHTHALMIA.

Strumous Ophthalmia may be defined as a general inflammation of the conjunctiva and external tunics of the eye, produced by sympathy with a morbidly irritable retina. In Strumous Ophthalmia then, increased vascular excitement is secondarily produced. The retina is the first seat of morbid disturbance.

Now, before I proceed to describe the symptoms of this disorder, it may be necessary to point out the peculiar indications of constitutional diathesis, by which the subjects of the complaint have been characterised. When I tell you that this disorder occurs in scrofulous children, you of course look for it in those whose external indications of morbid susceptibility will correspond with the description of a scrofulous child, as given you by most of the writers and lecturers who have entered upon the subject. In this expectation you will very frequently be deceived.

The existence of Strumous Ophthalmia like that of struma itself, has been too frequently connected with those external marks of constitutional peculiarity, which popular opinion has assigned as a distinguishing character of scrofula. It is true that children possessed of light or red hair, of delicate skin, and flabby muscles, and so forth, are almost in-



variably predisposed to scrofulous diseases ; but other individuals, whose external characters are nearly the reverse, are equally predisposed to the disease. Thus we frequently find both scrofula and Strumous Ophthalmia in patients who have dark hair, dark eyes, and of an healthy complexion. All children, and all families are more or less predisposed to scrofula ; but the latent tendency is more frequently, and more readily developed in some than in others. A predisposition to scrofula is increased, and, therefore, frequently manifested by any causes which tend to diminish the natural and healthy powers of the system, and therefore the disorder is often induced by general debility. But debility and scrofula are two very different causes of disease. Thus the extreme of debility in some constitutions, will never give rise to the development of a strumous diathesis.

In others again the disease will occur locally, when the general health and powers of the system appear in other respects to be perfect. In some individuals neither the effects of excessive depletion, nor severe local injury, will be attended by those characteristic marks of morbid action, by which we ascertain the presence of struma. In others, again, comparatively trifling general depletion, or injury to a part of the body, (a joint for instance), will give rise to a train of constitutional and local symptoms of a truly scrofulous character. A want of power in the system, in other words, debility is an attendant upon scrofula ; it may in some cases occasion a de-

velopment of the disease, but debility is not alone the cause of those morbid phenomena which indicate the effects of scrofulous disease upon the different tissues of the body. Serofula is in itself a peculiar and separate disease, frequently mixed up and combined with other causes of disturbed action in the system, yet possessing in itself specific characters obvious and distinct.

Strumous Ophthalmia begins in a morbid irritability of the retina, and from sympathy with that morbid condition of the nervous tissue, a general inflammation is produced in other component parts of the organ of vision, but more particularly in the first instance, in the mucous membrane of the conjunctiva. Now, I presume you are aware that a continued and excessive stimulus of light thrown upon a healthy retina will occasion an increased degree of vascular excitement in the different tunics of the organ, giving rise occasionally to the severest forms of Ophthalmia. When, therefore, the retina is rendered by morbid irritability more than naturally sensible to the stimulus of light, we of course find, as we might naturally expect, that the ordinary light of day will produce a degree of excitement, equal to that which an extreme and artificial stimulus produces in the healthy subject. And we consequently account in this way, for the appearance of sympathetic inflammatory action in the part in cases of Strumous Ophthalmia. This inflammatory action once set up and continued in a strumous constitution,

becomes a confirmed disease of the mucous and other membranes. But in the first instance, sympathy with a morbidly irritable retina, is the cause of increased vascularity of the part.

I shall now endeavour to make you acquainted with the particular symptoms and treatment of the disease I am describing. In the first place, you will recollect, that these symptoms occur in children generally, and in children of various complexions; not always in white bloated, flabby, subjects, with white or red hair, and light eyes, but in those of a nearly opposite character. In whatever subject, however, the disease occurs, the train of symptoms will be as follows:—

In the next place you may rest assured, that in all cases of Strumous Ophthalmia, the digestive organs are in a disturbed or morbid condition; whatever other symptom may be wanting this is always present. This disorder in the digestive organs will differ in kind and in degree.

But the existence of a disordered state of the stomach and bowels, is to a certain extent present during an attack of Strumous Ophthalmia; and the first effect of this condition of the primæ viæ, viz., the first prominent symptom will be, as I have already said, intolerance of light; this not arising from any disease of the retina, but from its increased sensibility, for the sense of vision is perfect. Thus the patient sees tolerably well in a darkened apartment, but the stimulus of an ordinary degree of

light, from the increased sensibility of the part, produces the effect of an excessive stimulus to a healthy organ. This intolerance of light is the strongest characteristic symptom of the disease. The eyelids are closed by the spasmodic action of the orbicularis palpebrarum. If by force you separate the parts, you will hardly be able to obtain a view of the cornea, for the cornea is thrown up behind the upper lid to exclude the light; the brow is contracted, and sometimes the muscle raising the ala of the nose and corner of the mouth, giving the countenance a peculiar and characteristic appearance. You can always in these cases, after having seen one or two, tell at once the nature of the disease the moment the patient is placed before you. The excessive intolerance will induce the child to seek and hide her face in the darkest corner of the apartment; and when in bed, the face is hid in the pillow or bed-clothes; for even the light which is admitted through the lids, will produce in severe cases, the most intolerable degree of suffering. By these symptoms then, you know at once that your patient is the subject of Strumous Ophthalmia.

Now, during the first stage of the disease, the eye will frequently appear uninflamed until a stimulus of light is applied; this is another very strong diagnostic symptom, viz. the absence in the first instance, of all indication of continued inflammation in the part, combined with extreme intolerance of light. After a short time, it usually happens that conjunc-



tival inflammation is produced, partly from sympathy with the retina, and partly from congestion of the vessels, in consequence of the position in which the head is constantly held. The face is always held downward, and the head in a drooping position; in such a position, it must be evident that local inflammation will be increased by vascular congestion. The unnatural position in which the child is constantly placed during the continuance of this disorder, is productive of injurious consequences, not only to the eye, but also to other and more important parts.

It has occasionally happened, that curvatures in the spine and other deformities have resulted from the inclination of the head and trunk for a length of time in one particular direction. And until the disease be controled, until the intolerance of light be diminished, no plan of treatment, no persuasion will induce the patient to alter that position, in which alone some alleviation of the symptoms is produced; therefore, the consequences and the treatment of Strumous Ophthalmia are important in the extreme. To proceed with the other symptoms in this disease. Even before the conjunctiva has begun to inflame, a profuse flow of tears will be poured forth from the lachrymal gland and conjunctival membrane, but principally from the *Lachrymal*. This lachrymal discharge, is produced by the sympathy which naturally exists between the retina and the secreting organs. It would appear that the secretion of tears in



Strumous Ophthalmia is of a morbid character, for the eyelids and face are to a greater or less extent inflamed and excoriated by the the profuse lachrymal discharge, which is constantly poured over the parts. Whether, however, the secretion be merely increased, and not altered in its character, or whether the secretion be morbid, may admit of dispute.

Excoriation and inflammation of the lids and face, is certainly not a positive proof of an altered condition of the fluids; for the unnatural stimulus of a continued lachrymal discharge would undoubtedly produce considerable excitement upon the sensitive skin of a strumous child, more especially, when it is remembered, that constant rubbing of the part is superadded to other causes of irritation; however, whether the secretion be morbid or merely increased, is not, perhaps, a matter of very<sup>\*</sup> great importance.

By some authors, the tears of Strumous Ophthalmia are described as *scalding-hot*. The temperature, however, is not increased in these cases; you will, therefore recollect, that the term burning-hot and scalding-hot, refers to the sensation experienced by the patient, in the passage of the tears over an inflamed or excoriated part, and not to any increased temperature in the lachrymal discharge, which is profuse, and conveys to the patient the feeling of scalding, and burning as it flows through the inflamed lids, and over the excoriated face.

We frequently see this disorder in children who are prone to pustular cutaneous diseases, and consequently find that the irritation which is produced

by Lachrymal excoriations, will act as an exciting cause for the development of a distinct and widely different form of skin disease. One of the most common consequences, then, of Strumous Ophthalmia in children will be the appearance of the pustules of *Porri* around and on the inflamed and excoriated parts. This pustular eruption, forming incrustations, will sometimes spread over the whole of the face and forehead, thus producing a form of disease which has been called by some, *Crustea Lactea*, by others *Porri Larvalis*. The eruption will now and then occur in other parts of the child's body, but generally it is confined to the face and neck.

You are not to suppose, that *Porri Larvalis* is a disease which essentially owes its origin under any circumstances to Lachrymal inoculation. But in a system predisposed to the disease, you will find that local irritation from various causes will give rise to its development. *Porri Larvalis*, however, is frequently met with in Strumous Ophthalmia from this cause,—the same constitution being frequently prone to the two diseases. Thus it happens that when you have cured your patient of Strumous Ophthalmia, the pustular disease will still remain. Occasionally the mucous membrane of the nose will become swollen and excoriated, and a flow of acrimonious discharge poured from the part. Efforts to 'suceze, therefore, during examination of the Eye will frequently be observed. The absorbent glandular system is almost always more or less affected.

These are the most common symptoms of Stru-

mous Ophthalmia in its first stage, — intolerance, lachrymal discharge, excoriations, pustular eruptions, occasionally morbid condition of the mucous membrane of the nose, and conjunctival inflammation. The conjunctival inflammation which attends this complaint in the first instance, is neither general nor very acute. You will see fasciculi of vessels advancing from the circumference of the globe towards the cornea, and frequently terminating at its circumference in extremely minute vesicles. The vascularity of the conjunctiva, therefore, is partial in the first instance, and confined to the conjunctiva of the sclerotic coat. In the course of time, however, acute and diffused conjunctival inflammation becomes permanently established. The conjunctiva covering the cornea participates in the disease, and a partial haze commences at the circumference, and extending towards the centre of the cornea, produces a reddish white semi-transparency of the part.

We next find that the red vessels of the sclerotic conjunctiva overshoot the margin of the cornea, and ramify over a greater or less extent of its anterior surface, (vide Plate 2, Fig. 2). At the extremities of these red overshooting vessels you will next find that minute vesicular elevations are produced, being formed in the conjunctiva covering the cornea. When the disease is neglected, the vesicles burst, and ulceration follows,—the ulcers being extremely minute and numerous, give the cornea a rough or scabrous appearance. The ulceration which is thus commenced in distinct spots on the con-

junctiva, will extend to the cornea beneath, and from extension of the disease will produce a most serious and morbid condition of the tunic. Thus, ulceration of the cornea from the bursting and ulceration of these vesicles, is one of the most common consequences of Strumous Ophthalmia. The cornea around the ulcerated spot becomes dull and opaque, and every now and then, in neglected cases, the ulcer will extend through the cornea itself, and produce evacuation of the aqueous humour. The iris is then pushed through the aperture, producing prolapsus iridis, (vide Pl. 2, Fig. 3). This, however, is a rare occurrence, if the vesicles do not burst and ulcerate, and the cornea is only opaque. Well, we next see the inflammation extending from the cornea to the sclerotic, and in rare cases, even to the iris. But sclerotic inflammation is a more common consequence of Strumous Ophthalmia than iritis. In the mean time the whole of the conjunctiva covering the sclerotic and cornea, becomes crimsomed and thickened by inflammation and effusion, and thus produces a disease which is called *Paunus*, (vide Pl. 2, Fig. 2)

It now and then happens that ulceration of the laminae of the cornea will weaken the coat so much as to allow of its yielding, and distension from the pressure of the contents of the globe. In these cases permanent opacity remains, and Staphyloma is produced.

From the disease long continued, an alteration is



produced by the effects of inflammation even in the sclerotic, and thus the figure of the globe is somewhat altered, being irregular on its external surface, or generally enlarged. The irregularity, called *Staphyloma sclerotic*, and general enlargement from an increased secretion of humours, called *Hydrophthalmia*. In these cases vision is generally impaired or destroyed.

These, then, are the symptoms of a neglected attack of *Strumous Ophthalmia* in its severest form.

You will see at once the distinction between the symptoms of this disease and others which I have described to you. The intolerance of light without external redness and lachrymal discharge will always be the distinguishing mark in the first stage; and in the subsequent stages the concomitant indications of a *Strumous diathesis*, with a continuance more or less of excessive intolerance, and the peculiar progress of conjunctival inflammation, commencing in a minute pustular or vesicular form; and thus by continuity with the cornea affecting the transparency of that tunic. These marks will always guide you in giving a correct diagnosis.

Now, with regard to your prognosis, it will generally, if not always, be found that when the whole of the cornea is perfectly transparent, and imperfection of vision and an increased vascularity can be accounted for by the causes which I have mentioned, you may expect a favourable result from your treatment, and indeed if the cornea should be slightly hazed, pro-



vided there exists no perfectly opaque condition of the part, and no appearance of deep or extensive ulceration in the axis of vision, a recovery in very many cases may be reasonably anticipated. In cases, however, where you find large and deep ulcers on the surface of the tunic, or where a white deep-seated opacity is to be observed, extending to its posterior layers, I recommend you to give a very guarded prognosis ; for large deep ulcers leave invariably opacity behind them, and an opaque deposit in the posterior layers of the cornea, when the subject of inflammation usually terminates in abscess, and in both cases neighbouring tissues will be to a greater or less extent participating in morbid change of function and of structure. A reddened appearance of a part or of the whole of the surface of the conjunctiva, covering the cornea, will not induce you to give a positively unfavourable opinion of the case, for vascular cornea, as it is called, is in many instances under the control of medical treatment. We next come to the treatment of Strumous Ophthalmia.

Now, as morbid irritability of the retina is in all cases of this disorder accompanied by, and probably dependent upon, and in the first instance produced by a morbid condition of the digestive organs ; it follows of course that our most efficient remedial agents must be those which are best calculated to restore the alimentary canal to a healthy performance of its functions, and to place our strong reliance on constitution treatment ; for, rest assured that local treat-

ment is in the first onset of the disease of comparatively minor importance; it is true that the remote consequences produced by neglect or improper treatment require the greatest attention, on the part of the medical attendant, to the application of local remedies for their removal, but not so when the first symptoms shew themselves,—I mean when increased redness on the surface of the globe is temporary not lasting, and when its existence may be satisfactorily traced to increased irritability of the retina, and not to the continued establishment of inflammatory discoloration. The distinction between the two may be easily made by taking the precaution of examining the eye before a strong light has been thrown upon it, a necessary precaution very seldom attended to.

I suppose, then, we have a case of Strumous irritability of the retina unaccompanied by *continued* redness of the conjunctiva. Our first object must be to clear the alimentary canal of its contents by purgatives. Some preparation of mercury, combined with a more active aperient, will be found the most useful medicine to begin with. Our next object will be to lessen irritability, which is dependent upon constitutional weakness, by a tonic plan of treatment; and at the same time to promote the healthy condition of the different secreting organs; for, in this complaint, as in Struma affecting other parts, you will meet with diminished power, in the system increased nervous irritability, and vitiated or suppressed secretions. Purge, therefore, freely in the first in-

stance, and afterwards follow those general rules, as regards the observance of a tonic plan of treatment, which I have already recommended when alluding to another form of conjunctival disease (page 32), taking care to insure a free evacuation from the bowels, twice in the course of the week.

If it is obvious\* that *continued* inflammation of the conjunctiva exists, leeches and depletion regulated by the urgency of the case may be required; but in the majority of instances where there has been no lesion of structure, purgatives and tonics will be all that can be required to effect a cure, more particularly in very young persons; the objection which offers itself to the application of leeches in the first stage, must be obvious, when we consider that Strumous Ophthalmia is the result of debility excited; if, therefore, by leeching, that debility be increased, of course the exciting cause of morbid sensibility must be increased in proportion.

We consequently find that the profuse application of leeches in the first stage of the complaint is generally followed by injurious consequences. Be careful above all not to apply blisters or counter irritants, if you can possibly avoid it without risk to your patient. It is true that the application of a blister is sometimes serviceable; but the highly irritable state of the absorbent system in strumous children will frequently give rise to inflammation and even suppuration of the cervical glands from such a procedure, and for the most part the attempt

at remedy is not required; the effect of it is occasionally worse than the disease.

The use of a warm bath is very often beneficial, and in very obstinate cases the exhibition of small doses of opium, antimony, and mercury in combination given every night may be required: these, however, are usually cases where we find a hazy cornea, and minute red vessels overshooting its margin (vide Pl. 2, Fig. 1), or covering its whole surface (vide Pl. 2, Fig. 2); here, the safety of the organ is threatened, unless the system is made to feel the influence of mercurial action, and, now and then, the establishment of continued nausea must be had recourse to, to lessen the surrounding inflammatory action.

In all cases of Strumous Ophthalmia tonics will be required during convalescence. For the treatment of ulceration, slough, or abscess of the cornea, or of diseases of other parts, resulting from this disorder in its worst forms, I must refer you to my Lectures on morbid affections of the different tissues of the Eye, considered separately. The local treatment consists in the use of tepid anodyne, collyria. I need hardly add that the Eye must be excluded from light as much as possible; flannel should be worn next to the skin, and every other means adopted with respect to clothing, and otherwise to prevent the patient from catching cold; but more particularly this precaution should be attended to with regard to *children*, especially those in whom perhaps the vanity and folly of their parents, in endeavouring to show off the



personal appearance of their young family, by exposing their nakedness as far as decency will admit, has assisted in the production of scrofulous disease, not only in the organ of vision, but perhaps in other parts of the body. Great advantage is to be obtained from the practice of general ablution or sponging followed by friction every morning. When the temperature of weather and the state of the patient permit, it is best to use cold water. In other cases tepid but not warm water is allowable. The risk of using water which is quite cold may be much reduced by expedition in applying it and by using but a small quantity. Lastly, never keep a patient, the subject of Strumous Ophthalmia, all day long in bed, if it can be avoided, unless the complaint is combined with febrile disturbance in the system, in which case it may perhaps be sometimes necessary.

The next disease of the conjunctiva, which I have to describe, is Pterygium.

## PTERYGIUM.

This disease consists in a partial, morbid, interstitial thickening of the conjunctiva of the globe, which is of a triangular shape and perfectly circumscribed, and commencing in the form of a flattened slightly elevated tumor, advances from the circumference of the globe towards, and when perfectly formed, as far as, the centre of the axis of vision, (vide Pl. 17, Fig. 7).



The base of the triangular growth is always attached to the circumference, and as the enlargement increases in size, the apex is gradually pushed forwards till it reaches the centre of the transparent cornea.

Pterygia have been described as fleshy and membranous, but the distinction between the two appears to be a useless one in a practical point of view, for the treatment is the same in both. The distinction has been made from the various appearances of thickness and vascularity of those excrescences, which are frequently met with.

When, therefore, from morbid interstitial growth of the conjunctiva, a thin grey semi-transparent triangular thickening of the membrane is produced, we call it a Membranous Pterygium, in this form we see vessels running in parallel lines from base to apex. When more raised, thicker, and more vascular, we call it a Fleshy Pterygium.

A Pterygium may be always distinguished from other diseases of the conjunctiva by its triangular form, the apex being forwards, and by its mobility, so that you can raise it readily with your forceps — further, by absence of pain or inconvenience.

Pterygia are of slow growth and may occur at any age; they are even met with in children, but most commonly in the middle or latter periods of life. Residents in warm climates are said to be particularly subject to this complaint.

A Pterygium forms in the following way:—The

Disease, whether membranous or fleshy, invariably commences on the posterior part of the sclerotic conjunctiva; either at inner canthi or outer, or the upper or lower part of the eye. It first appears in the form of a small triangular flattened patch of thickened membrane, perfectly moveable, and altogether unconnected with the subjacent sclerotic, being a growth of the conjunctival membrane only.

You next find that from the circumference of the globe, the tumor as it increases, advances towards the cornea; the broadest part of the triangular excrescence being situated posteriorly throughout the whole progress of the disease, whilst the apex is placed forward, advancing towards the centre of the eye.

As soon as the projecting narrow extremity of the Pterygium has reached the margin of the transparent cornea, it begins to form a less elevated surface; and continuing to increase, will advance to the centre of the cornea, beyond which point it ceases to progress: a single Pterygium, therefore, although opaque, can never produce perfect blindness, for the disease stops short in the centre of the cornea, and does *not* pass over to the opposite side. A portion, therefore, of transparent membrane remains uncovered by the Pterygium. When arising from the inner canthus, it is placed generally behind the caruncula, which part is not involved in the disease. Pterygia are generally met with in one eye, but sometimes in both.

Pterygia are of very uncertain growth, sometimes

the tumor will from the commencement regularly and gradually continue to increase, until it has acquired its full and perfect size ; at other times again, after having reached a certain point, the disease remains stationary throughout the rest of life, producing no inconvenience.

You will generally find that unless the growth of the Pterygium has encroached so far upon the transparent cornea as to produce indistinct vision, there will be no necessity for the application of remedies. But when from the growth of two coalescing Pterygia, or from the presence of a single large Pterygium, the sight becomes impaired, we then find it necessary to remove the disease. Sometimes in the early periods of life the deformity of this morbid growth will induce the patient to seek for a remedy. In either of these cases the remedy will be as follows :—The treatment consists in excising either a part or the whole of the tumor. There are two circumstances which will render the removal of the whole Pterygium improper : First, its attachment to the cornea, and Secondly, its attachment to the Caruncula Lacrymalis.

If, therefore, the tumor arises from the inner canthus, or if it is attached to the transparent cornea, the complete removal is not to be attempted. If the tumor be unconnected with these parts, it may be boldly and freely cut out. The reason for this caution is as follows :—In the first place we avoid meddling with a portion of Pterygium overlapping the

cornea; because the close connection of this part may render the separation dangerous to the safety of the transparent tunic; and because, moreover, we find that when the corneal portion is left, after the removal of the other part, absorption takes place and dissipates the disease: the removal, therefore, of Pterygium from the cornea, is neither safe nor necessary, and is always to be avoided.

With regard to the objection to a complete excision of a tumor of this kind at the inner canthus, it must be obvious that the caruncula lacrymalis must be necessarily involved in the operation: consequently the operation must be unnecessarily tedious and painful. In such cases, therefore, we leave that portion of the base which is attached to the inner canthus, and remove the remainder.

If you have a large Pterygium to remove, involving either the cornea, or caruncula lacrymalis, or both, you will perform the following operation:

The lids are to be kept separated and the globe fixed by an assistant, the central portion of the Pterygium is then to be transfixed with a small tenaculum held in the left hand, and drawn forwards so as to put upon the stretch its cellular connections with the sclerotic, a common phymosis knife is then to be passed behind the tumor, and by bringing its cutting edge out, a section is made through: continue to draw the part forwards, and by making a second section in the same way the central portion is readily and easily removed. The only difference in



the operation when an entire Pterygium is to be extirpated, consists in using a fine scalpel instead of a curved knife, and after the part is pulled forwards carefully dissecting it off;—bleeding is afterwards to be promoted, as it will lessen a tendency to subsequent inflammatory action, therefore the eye is to be bathed well in warm water. *Both* eyes are then to be excluded from light; all violent pressure upon the globe is to be avoided; tepid washes may be applied until the next day, when the lids may be separated to ascertain the condition of the organ.

When the eye is opened the following appearances will present themselves.—It is necessary that you should be made acquainted with them, otherwise you might mistake them for the appearances of disease. You will find the surface from which you have cut the Pterygium, coated with a yellowish deposit, and around this spot the cut surfaces of the conjunctiva will present a somewhat ragged and distinctly inflamed margin: this is the natural appearance of the parts after the operation.

The yellow surface is produced by inflammation of the reticular textures which you have wounded and exposed beneath the membrane, and not by any change in the sclerotic. The sclerotic is behind the yellow deposit of lymph and mucus which I have mentioned.

With regard to the appearance of inflammation on the cut edge of the conjunctiva, this is produced by the salutary efforts which nature is making to repair



the wound, and, therefore, requires to be promoted rather than subdued.

In a short time the wound will contract and cicatrize; at first the cicatrix is opaque, afterwards it assumes a more natural and a more transparent appearance. — Cicatrization is usually quite perfect in two or three weeks.

If the process of redress should appear to be going on slowly, stimulating collyria will be required; but generally a natural redress is effected without artificial means.

The cause of Pterygium is not well ascertained. The composition of the tumor varies. Sometimes it is of an adipose, or sarcomatous or highly vascular nature; in other cases it is of a fibrous or tendinous consistence.

#### PTERYGIUM PINGUE.

Occasionally a spurious form of Pterygium occurs in old people. This consists in the formation of small yellow steatomatous granules, which are situated beneath the conjunctiva. The disease has been called Pterygium Pingue. It is totally distinct from the other complaint, and occurs almost always in elderly persons, never requiring removal or medical treatment.

I merely mention the disease, lest, when you see round and small yellow elevations on the conjunctiva, you might mistake them for Pterygium in an incipient state.

There is, however, one distinguishing mark which

will be sufficient. True Pterygium is always of a triangular or pyramidal form; Pterygium pingue is circular or irregular, (Plate 17, fig. 7 and 8.)

So much then for Pterygium, the whole treatment of which consists in the excision of the central portion of the tumor, or of the whole of the morbid excrescence according to the situation of the disease.

#### STAPHYLOMA RACEMOSUM.

A tumor sometimes forms upon the conjunctiva, which although not of a malignant character, resembles very closely fungus hæmatodes, (Vide, Plate 11, Fig. 2.) It is purple, lobulated, and highly vascular, and projects to a considerable extent beyond the surface of the membrane; it has been compared in appearance to a bunch of currants, hence its name. It occurs in the fore part of the globe, neither the sclerotic or cornea are affected in the very commencement, although subsequently they may be involved. It is simply in the very first instance an interstitial disease of the conjunctiva, somewhat resembling in its appearance a nævus.

This disease may be distinguished from fungus hæmatodes (vide Page 5, fig. 3.) by its superficial situation and limited extent, beginning as a small purple lobulated tumor and retaining the same character throughout. The first indications of fungus will be in the interior of the globe, (Vide Page 11, fig. 1.) The first appearance of this complaint will be superficial.

With regard to the treatment, this consists in

excising the part, or using caustic for its removal; excision is always to be preferred. The mode of operation hardly requires description, you have only to fix the eye and draw the tumor forwards after having transfixed it with a tenaculum, and to excise the whole of the morbid growth with a scalpel or probe-pointed bistoury. This disease is not liable to return, —the sight, however, after, if not before the operation, is permanently destroyed.

## CHEMOSIS OF THE CONJUNCTIVA.

Chemosis of the Conjunctiva, accompanies most of the acute and many of the chronic inflammatory diseases to which this membrane is subjected. I have endeavoured to explain to you the nature of those changes in subjacent parts which occasion the complaint, and, therefore, I need not repeat what I have already told you. I merely introduce the subject now, to supply a deficiency in the description of the pathology of the disease, which might otherwise be found to exist, namely, that it may sometimes occur as an idiopathic affection unconnected altogether with *acute inflammation*, in which cases we find the appearance of a semi-transparent membrane bagging forwards, as if filled with a gelatinous substance; this œdematous tumefaction, is for the most part met with in old persons, and requires merely the application of mild astringents for its removal; the appearance of inflammatory Chemosis is shewn in (Pl. 13, Fig. 1).

In some cases of Chemosis an appearance presents itself, which must be equally interesting to the anatomist and the pathologist; as it affords a perfect proof to the former, of the separate existence of a structure, which perhaps he might not be able by dissection to detect, and to the latter a guide for the treatment of his patient. I mean the appearance of Chemosis of the Corneal Conjunctiva, by which any attempts at argument intended to prove, from the apparent impossibility of separating the parts in the healthy subject, that the conjunctiva does not form an anterior covering to the cornea, are at once set at rest. To the surgeon and pathologist the appearance of corneal chemosis, is an assurance that chronic and not acute disease is present, for in acute inflammatory Chemosis, the bagging forward of the sclerotic portion, conceals the corneal portion of the membrane where it covers the circumference of the cornea, at which place corneal chemosis almost invariably commences.

#### GRANULAR CONJUNCTIVA.

It now and then happens that from continued or chronic inflammation, the smooth surface of the conjunctiva lining the lids will be raised into lobes or granules—that the membrane itself will be preternaturally thickened, and the whole of the tarsal conjunctiva will become reddened by inflammation. This chronic thickening and increased vascularity of the tissue is called a Granular Conjunctiva,



and is occasioned by chronic and irregular thickening of the membrane, accompanied more or less by the organization of adhesive matter, which previous inflammatory action had poured into the cellular membrane beneath. The membrane itself remains entire without the slightest abrasion of its surface, as a necessary concomitant symptom. A granular lid, therefore, is not a granulating lid.

Granular is the term applied to that peculiar appearance on the surface, which the changes in subjacent parts produce from unequal and unnatural distention, the result of inflammatory effusion. A granulating lid would of course imply that the membrane was wanting in the part, and that a denuded surface secreting granulations was exposed.

The granular projections when first formed are soft, and bleed readily under pressure; when of long standing they become firm and hard under the touch, and their vascularity is diminished. Now, if we consider merely the effect of this complaint as it affects the lids only, it would appear to be a disorder of trivial importance, and one which could never endanger sight. But we know that a most severe and formidable disease, in other and more important structures, is the occasional consequence of its long continuance; and, therefore, a knowledge of its proper treatment is of essential importance. The part which suffers, in the first instance, from the consequences of granular lids will be the transparent Cornea. This tunic from the



constant friction of the granulated surface, will become inflamed, opaque, and vascular. If the source of irritation is allowed to continue, the Cornea will from constant friction and abrasion become disorganised, and thus lead to a total destruction of the functions of the organ.

A nebulous or diseased cornea, then, is a frequent consequence of granular lids; and a neglected case of this kind will occasionally terminate in blindness. Now, the consequences of the pressure of granular lids on the transparent cornea are sometimes mistaken for morbid appearances of that part, arising from other causes, and, therefore, lest you should fall into the same error with some others, I advise you in all cases of diseased cornea to pay most particular attention to the condition of the conjunctiva of the lids more especially of the upper lid: for, from pressure from that part the peculiar disease of the transparent tunic first shews itself, and in the way represented by the diagram in Plate 3: viz. that it shews itself on *the upper part* of the cornea, in the form of a vesicular kind of inflammation, accompanied by a plexus of red conjunctival vessels, which pass down to the part from the circumference of the globe, and overshooting the margin of the cornea, send extremely minute branches to each of the vesicles, which rapidly burst and leave a scabrous appearance behind; but still transparency is not lost *at first*.

After a very short time, however, a haze appears on the part, shewing that the inflammation on the surface is extending to deeper seated layers.

A more opaque haze now appears, and spreads from the point I have mentioned over the whole surface of the tunic; the greatest degree of opacity still shewing itself on the upper part; when the whole cornea becomes of a perfectly opaque, white colour: from this cause the distinction is of course lost. Surrounding structures partake, also at this time, in the morbid action thus set up, but not always to any great extent in the first instance.

Remember, then, that in all cases of granular lids, you have to look for the worst effects of the disease on the upper part of the transparent cornea, and in every case of superficial inflammation of the cornea, you may rest assured that if the appearances I have described are met with, they owe their existence to the mechanical pressure of the eyelid.

Now with respect to the treatment. If active conjunctival inflammation is combined with a granular state of lids, you, in the first place, deplete, applying leeches, cupping, purging the patient, placing him at the same time on low diet, and freely scarifying the lids.

When active inflammation is absent, if the affection has been of long continuance, but not otherwise, counter-irritation will be found useful, this being effected either by the application of blisters, issues, or seton, to a neighbouring part, attending at the same time to the general health of the patient. If the granulations are hard and in a chronic state, in addition to frequent scarifications, it will be necessary

moreover, to excite the morbid textures to healthy action, and to promote absorption of the granulated deposit by the use of astringents, and in some cases we find it necessary to excise the indurated granules, for which purpose a pair of curved scissors will be the most convenient instrument to use.

The best astringents I have made use of have been the *Liquor Plumbi Subacetatis*, and the *Argenti Nitras*, the former applied pure, the latter in solution, in the proportion of a drachm to half an ounce of water : in very obstinate cases you may apply the pure nitrate of silver to the granules with good effect, take care, however, in using it not to stain the conjunctiva of the globe, which will not be done if you observe the following precautions :— In making use of the *argenti nitras*, or any other astringent, whether fluid, solid, or unctuous, to a diseased eyelid ; first evert that lid, holding it well away from the globe ; dry it by passing a piece of linen over its conjunctival surface, and be ready the moment you have dried it to apply your astringent, after having done which, immediately dry it again, and apply some mild unirritating ointment, wipe this off, and apply it once more, and you will then be almost certain that whatever may have been applied to the conjunctiva of the lid will not reach that of the globe, the object of preventing which must be obvious to you, when you consider the effect your strong local applications would otherwise produce upon a continuous surface of a healthy membrane.

The various forms of astringent collyria which I have already mentioned, may be used with advantage as a local application in granular lids. I generally prefer collyria to unguents, but either will be found useful if properly applied,—the mercurial and those made up with the argenti nitras, and unguentum cetacei I have found the best—the latter in the proportion of two drachms to half an ounce of unguentum cetacei.

#### CORNEA.

Inflammation of the Cornea like inflammation of other parts, may be divided into the acute and chronic form. Acute inflammation of the Cornea is always a compound disorder, the sclerotic, and frequently the iris being involved in the disease. The intimate vascular connections between these tunics will explain this circumstance. The first symptom will be a hazy appearance of the membrane.

In idiopathic and general inflammation of the Cornea, you find that the appearance of this hazy state of the tunic is invariably accompanied by the formation of a zone of red vessels in the sclerotic and conjunctiva around the circumference, Pl. 7, fig. 2. As the disease advances the haze becomes thicker and of a whitish colour, and opacity either partial or complete is produced; the redness of the sclerotic increases, and the conjunctiva to a greater or less extent participates in the disease.



In severe cases the iris becomes inflamed, but the existence of this inflammation may escape detection, from the difficulty of seeing the part through the haze or opacity of the Cornea. Pain is felt in the globe and orbit, and intolerance of light.

The treatment of an inflamed Cornea, where we have neither ulceration nor abscess, but where the tunic is hazed and becoming or become opaque, will consist in the first instance in depletion. Secondly, in making use of counter irritation and producing an impression upon the system by mercurials; general depletion in the acute form, local depletion and counter irritants in the chronic will be required. Constitutional disturbance is not always present, therefore we have to look principally to the local symptoms. In young persons under the age of puberty local depletion will usually be sufficient, consisting in cupping or leeching with the addition of brisk purgatives.

In adults of full habit, abstraction of blood from the arm, as well as local bleeding will be necessary. Having thus freely depleted in the first instance, you will find that the disease will begin to yield, viz., less vascularity will be seen in the sclerotic conjunctiva, and the Cornea will become less opaque, and intolerance lessened. After this the occasional application of leeches to the temple will be necessary, with continued counter-irritants. Blister, seton, or issue may be required. Avoid stimulants in diet, and attend to the healthy condition of the digestive organs; and in these as in most



cases of local disease, you will find it necessary to insure the daily evacuation of the bowels, by a saline purgative. It sometimes, however, happens, that when the chronic state has supervened, and all indications of active increased vascular excitement have disappeared,—it sometimes will happen that the loss of transparency in the Cornea will remain; a clouded haze is still observed, which usually appears thickest on the anterior part of the tunic, and arises from the interstitial effusion, and partial organisation of adhesive matter. This effusion is principally between the conjunctiva and the Cornea, or between anterior layers of the membrane and is called a nebula.

Nebulous Cornea differs from the opacity produced by active inflammation, in being the result of gradual and slow effusion, and not altogether of an alteration in the circulating fluids of the capillary system. (We have analogy for this in the morbid affections of the peritoneum, pleura, and arachnoid.) The history of the case, and concomitant symptoms will be the best guide; in the treatment attend to the degree of vascularity in the conjunctiva and sclerotic, for you must be guided by the presence or absence of disease in adjacent parts.

In true nebula of the Cornea of recent formation, you will very frequently succeed in removing the opacity by mercurials. In nebula of long standing no remedies are known for the disease. It is only, therefore, in recent cases, before the organisation of the new matter becomes complete that we affect the

system by mercury, in order to preserve the sense of sight by removing an opaque spot from the axis of vision. In giving mercury you are not to salivate; the appearance of a red line on the gums will be a sufficient proof that your medicines are doing all that is required. If after a week or two you find that you have made no impression upon the opaque spot, it will rarely happen that you will succeed in your object. According to the state of your patient's constitution, you will after this time either suspend the use of mercurials, or continue them for a longer time. If the transparency is reappearing, of course you will go on until the cure is perfect.

Whilst you are thus endeavouring to induce a restorative action in the part, by the operation of mercury upon the system, you will find great assistance from the local use of stimulants or astringents. By these you will still further excite the absorbent and capillary system to increased and altered action, and consequently the removal of the nebulous opacity will be considerably hastened by such means. There are many formulæ of astringent collyria which you may use with advantage in these cases. I have always found mercurial the most useful. The following are those which I generally employ:—

R Hyd. chlorid, gr. v.

Liq. Calcis. ʒ j.

M

R Hyd. Bichlorid, gr. jʒj.

Liq. Calcis. ʒ j.

M

By these constitutional and local means you will frequently succeed in removing recent opacities of the Cornea. You must be careful in distinguishing between the opacity of active inflammation and the Chronic nebula I have described. Stimulating collyria are useful in one case and injurious in the other ; vascularity of the sclerotic, pain and intolerance, forbid the use of stimulants, and indicate the necessity for depletion.

These are the common symptoms and treatment of simple inflammation of the Cornea. Sometimes the consequences are different ; instead of terminating in opacity, suppurative and ulcerative inflammation will follow, and an ulcer will form on the surface.

#### ULCERS OF THE CORNEA

Are more frequently overlooked by those who have not paid particular attention to Ophthalmic Surgery, than many other diseases of the part. A healthy ulcer of the Cornea is not attended by discolouration, nor loss of transparency in the part. It appears as a transparent pit or depression, frequently only to be seen in a side view, (vide Pl. 13, Fig. 2). An ill-conditioned and inflamed ulcer will present a different appearance. You then find a ragged edge and a yellowish surface on the ulcerated depression, with more or less of surrounding haze or partial opacity. If you have a sloughing ulcer you know

it by floeulent opaque and discoloured surface, the slough being readily distinguished from the surrounding parts by its ragged and deadened opacity.

It has been asserted, that we can never detect pure pus upon the surface of a superficial ulcer of the Cornea. Hence it has been supposed that ulceration of the Cornea is never attended by purulent effusion. This opinion has been founded upon the appearances of superficial uleers, and not upon a general observation of the different morbid conditions of the part. It is contradicted by the circumstance of the formation of true abscess in the tunic, which cannot be produced without absorption and suppuration. Whether the minute quantity of pus which forms upon an ulcerated speck in the Cornea be washed away as fast as it collects by lachrymal discharge and thus escapes detection, or whether instead of pus, a more transparent or serous fluid be always poured out from the surface of the ulcer, is a point which has not yet been satisfactorily settled. That the ulcerated parts must secrete can hardly be doubted, but as the precise nature of the secretion is not a very material point in practice, I shall proceed with the treatment of uleers of the Cornea.

#### TREATMENT.

As in these cases the disease may not be confined to the ulcerated spot, but connected with a morbid condition of the whole Cornea or of other tunics, it



will be necessary, in these cases, to attend especially to the restoration of healthy action in the surrounding parts. Ulceration is, as you know, the result of inflammatory action ; if, therefore, the exciting cause be still present, if by intensely increased vascularity of the conjunctiva and sclerotic, and diffused and general haze of the whole cornea, the existence of acute inflammation not only in the cornea, but in adjacent tissues is manifested ; of course antiphlogistic measures, either general or local, will be called for. If a corneal ulcer should present a sloughy appearance, want of power, as well as altered action in the part is, in most cases, obviously indicated, and therefore the common principles of surgery will teach you, that local stimulants and constitutional support will be required ; I say in most cases, because in some few it will be found, that a sloughing cornea is accompanied by the cause of its first development, viz., acute inflammatory action, and consequently requires an opposite plan of treatment ; generally, however, an ill-conditioned or sloughing ulcer of the tunic, unless occasioned by a very rapid accession of diseased action, is accompanied by congestive atonic inflammation ; thus, ulcers of the Cornea require precisely the same means of remedy with those in other parts. The only difficulty in the treatment consists in knowing the precise appearances which they present under different forms of morbid or healthy excitement. The very best local application to an ulcer-



ated cornea, is the pure nitrate of silver, but this is seldom required unless a slough has formed, or the floor of the ulcer appears yellow or of a brownish colour, and no disposition is observed in the part to close up and heal.

I have endeavoured to describe to you their appearance under morbid excitement, it is now necessary to make you acquainted with the peculiar appearance of an ulcer of the Cornea under the process of healing. I told you that an inflamed Cornea always assumed a hazy appearance, which therefore generally indicated the propriety of depletion. From this you may suppose that the appearance of a white semi-transparent halo around an ulcerated depression of the Cornea, may lead you to fear that local inflammatory action is requiring control from your medical treatment. This, however, is not the case; the appearance of a circumscribed, radiating haze around the edge of the ulcer, will assure you that the healing process has commenced; it will convince you that the work of repair is undertaken by the neighbouring capillaries, and that increased and salutary action has been set up in the part; thus the circumscribed haze around the ulcer is the haze of health and not of disease.

Now, amongst the most perfect and beautiful pathological illustrations of a natural adaptation of means to ends, the healing ulcer of the Cornea is, perhaps one of the most striking; for we see in these cases the mode in which nature avails herself of distant resources for the attainment of her object; thus, when the

vessels of the Cornea are unable to effect the process of repair, we find that the vessels of another part are called in to their assistance; for a plexus of conjunctival vessels will be seen passing over the fore part of the globe and over the Cornea, without giving off any branches until they reach the ulcer; to this part they are distributed, and they here pour out and organise the adhesive deposit, and thus assist in repairing the breach which ulceration has produced upon the surface of the Cornea.

After a time the sides of the ulcer approximate, the cavity is filled up by a soft grey matter, and a smooth surface of conjunctiva is formed on the spot; the halo disappears, and the red vessels having performed their destined purpose return to their former condition, and continue afterwards to carry colourless blood. In children a superficial ulcer of the Cornea will leave no permanent mark behind; but in adults, if the ulcer has been of any considerable size, a whitish opaque spot will remain ever afterwards. Sometimes an ulcer will close up and heal without the appearance of a halo or red vessels; large and deep ulcers, however, usually exhibit the indications of altered action which I have been describing. It sometimes happens, that an ulcer of the Cornea will penetrate nearly to the membrane of the aqueous humor without injuring that part, and the membrane is seen at the bottom of the ulcer covered by an extremely

thin layer of cornea, in the form of a round shining vesicle (vide Pl. 13, Fig. 3).

If the membrane should give way, of course the iris will protrude, otherwise the ulcer will in the course of time granulate over the spot and close up the gap. The appearance of a round shining transparent vesicle, therefore, in the floor of an ulcer may be produced, not by any morbid change in the granulations, but by a protrusion of the membrane of aqueous humor, together with the posterior layers of the cornea at this part. Well, then, an ulcer of the Cornea, may either present the appearance of a transparent depression, or of a yellowish opaque depression. The degree of inflammatory action attending the disease, being indicated by a degree of general haziness in the tunic, and by the redness of the sclerotic and conjunctival coats. Intolerance of light and a circumscribed semi-opaque zone round the ulcer, and the appearance of a plexus of conjunctival vessels running toward the part, occasionally attending the healing process. The treatment consisting in controlling vascular excitement by local or general depletion, counter irritation being useful in the chronic form of the complaint; remember that the best local application is the nitrate of silver; we are to be guided by general principles, and treat an ulcer of the cornea as we should an ulcer in any other part of the body.

## CONICAL CORNEA.

The cornea, from preternatural increase in size, will occasionally assume a conical form, and will project considerably beyond its natural level. Conical cornea is hardly to be called a disease, the transparency of the membrane remains entire. It is not the effect of inflammatory or any other recognisable morbid action, it occurs in the middle periods of life, in the robust and healthy as well as the cachectic. We are entirely unacquainted with the cause of the complaint, and we are equally unacquainted with any plan of treatment which can be pursued with benefit to the patient. A diagnosis of this affection is extremely easy, the prominence is of course seen immediately, by taking a side view of the eye; when you view the eye in front, an extraordinary brilliancy is produced by the peculiar reflection of light from the transparent cone. In a front view the projection is not observed, thus a change in the figure of the cornea constitutes the whole of the disease. An individual, the subject of this affection, will be unable to distinguish distant objects, being always near-sighted.

This disorder will sometimes, after having been developed to a certain extent, remain stationary for the rest of life, without producing much inconvenience. In other cases the projection will acquire an enormous size, and the apex of the cone becoming



irritated by the frietion of the lids, will inflame, and occasion the formation of an opaque spot in the axis of vision; generally eonical eornea remains transparent.

We know nothing of the pathology of this affection, we know nothing of its treatment; and, therefore, I need not oeeupy your time by dwelling on the subject.

#### ABSCESS OF THE CORNEA, OR ONYX.

Inflammation of the Cornea will frequently terminate in the formation of an abseess between its layers. Abseess of the Cornea generally takes place in the posterior layers, and bursts into the anterior chamber of the eye. An abscess of the Cornea never contains pure pus. Pus is mixed with adhesive matter, and is more glutinous than the matter from other abseesses in many other parts; still a purulent effusion constitutes a component part of the contents of the abscess. Onyx or abseess of the Cornea, shews itself first in the form of an opaque spot surrounded by a zone of diffused haze.

It often happens that the anterior layers of the Cornea are comparatively transparent, whilst an opaque spot, indicating the situation of the abscess, is to be seen directly behind them in the posterior layers; this will always, when present, distinguish abscess of the Cornea from any other disease, for in other diseases producing opaeity, you have the



anterior part of the tunic equally opaque, and sometimes more so than the posterior. In Onyx you often have a transparency before the opaque spot; this distinguishing mark is, however, not always present.

When an abscess in the posterior layers of the Cornea bursts into the anterior chamber, the matter sinks to the lower part of the chamber, and produces an appearance which is called hypopion or unguis. (Vide Plate 4, fig. 1.) Hypopion is also produced by suppurative inflammation of the membrane of the aqueous humour, in which case there is no circumscribed opaque spot on the Cornea.

These then are the terms given by oculists to the appearances presented by abscess of the Cornea and its consequences. Onyx signifying the opaque inflamed spot which surrounds the abscess, and the term unguis or hypopion, being applied to the lodgement of matter in the anterior chamber.

#### TREATMENT.

The treatment will depend upon the constitution of the patient, and the degree of vascular excitement in the part. If of a full and plethoric habit, and the conjunctiva and sclerotic are reddened by inflammation, and the Cornea is rendered generally opaque by excessive action, administer brisk aperients, and bleed both locally and generally in the first instance.

If, on the contrary, you find that no very high degree of increased vascular excitement has been set up in the part, and that the opacity of the cornea is partial or confined to the immediate neighbourhood of the abscess, local bleeding and counter irritation will be sufficient. If the abscess is chronic, alterative doses of mercurials and diaphoretics, and tonic medicines, with generous diet, will be the constitutional means of treating the disease; counter irritants are generally useful.

*give  
any to  
the eye  
dis-  
after  
m - cal  
s - ant*  
Avoid the use of mercury in excess. If the system becomes affected by mercury, the disease will frequently spread with great rapidity and destroy the whole of the cornea. In abscess of the cornea, as in abscess of other parts, you will always find that suppurative and ulcerative inflammation is aggravated by ptyalism.

I have occasionally opened the anterior chamber at the lower part through the cornea, and evacuated the matter of hypopion with very good effect. If the opening be not very small, you will have prolapsus of the iris; a simple puncture of small size will be sufficient; it is rarely required, and only when other means have failed. Generally, abscess of the cornea may be cured by local bleeding, counter irritation, and alterative and tonic remedies, avoiding the use of stimulants; collyria are worse than useless in these cases. General depletion is only necessary when diffused inflammation of the other tunics is present.

## STAPHYLOMA OF THE CORNEA.

Staphyloma is an unnatural and opaque projection of the cornea, usually produced by ulceration, and always attended during its formation with a considerable degree of inflammatory action. Staphyloma may be divided into two kinds; viz., into that which is produced by a morbid condition of the cornea only; and into that in which the iris also enters into the composition of the tumour; the two kinds are produced in the following way: the cornea sometimes becomes thinned and weakened by ulceration; in consequence of this, it yields before the pressure of the contents of the globe, and bulges forwards. Adhesive inflammation is set up in the part; and adhesive matter is poured out and organized.

By the deposition and the organization of new matter, the ulcerated tunie is strengthened and partially repaired; and thus an increase of the tumour is prevented.

We find analogy for this operation in nature in the thickening of a hernial sac in the walls of an aneurismal cavity, and even in the formation of the surrounding investments of a common phlegmonous abscess. In hernia, in aneurism, in abscess, and in staphyloma, we find that pressure upon a weakened part is opposed by a deposition and organization of new matter.

Now if it should have so happened that an ulcerated aperture has formed completely through the

entire cornea, and the aqueous humour has escaped, the iris will prolapse, and lying in contact with the posterior surface of the cornea, will be kept in that situation by the pressure of the contents of the globe from behind, and becoming inflamed will throw out a layer of adhesive matter on its anterior surface. This adhesive inflammation then of the cornea on the one hand, and of the iris on the other, and the circumstance of their being placed in close apposition will occasion a permanent union by adhesion between the two.

Thus the iris being glued to the cornea will be pushed forwards together with that coat, and will consequently form a part of the staphylomatous tumour. If, on the other hand, it happens that there is no ulcerated breach through the cornea, you then find that the cornea alone will bulge forwards; and that the iris will retain, to a certain extent, its relative position.

These, then, are the two kinds of staphyloma. The one composed of a morbid dilatation and opacity of the cornea alone; the other being occasioned by the bulging forwards of an adhering iris and opaque cornea. In the one, the tumour is of a pearly white colour; in the other, of a grey or bluish hue, (vide Plate 4, fig. 2.)

#### TREATMENT.

The treatment of staphyloma is extremely simple, it consists in the entire removal of the tumour: the



different results of the operation in the two cases will be as follows: in the one, the globe of course collapses from the removal of the entire adherent iris; in the other, the cornea only being involved, the iris remains entire; and the globe, to a limited extent, preserves its globular figure; the operation is painful, and occasionally followed by acute inflammation. It will be found necessary afterwards to deplete, to prevent abscess of the remaining portion of the globe; be careful to avoid pressure on the part; tepid fomentations and local depletion will in most cases be required after the operation.

The recumbent posture is not necessary during the after treatment.

#### MORBID AFFECTIONS OF THE IRIS.

I have already mentioned to you, that in consequence of the evacuation of the aqueous humour through an aperture in the cornea, the Iris will project through the opening, and form what is called a prolapsus of the Iris. I have not, however, mentioned to you the treatment or the exact appearance of this affection, and shall now therefore take an opportunity of doing so.

Prolapsus of the Iris may be either complete or partial. Complete prolapsus takes place after the destruction of nearly the whole of the transparent cornea by slough from small pox, Purulent Ophthalmia, or other causes. Partial prolapsus is the consequence



of a small aperture either from wound or ulceration. When complete prolapsus has been produced, the Iris is pushed forwards into the former situation of the transparent cornea, and presents the appearance of an irregular tuberculated mass. In the course of time, inflammation subsides, and the tumour formed by the projecting Iris shrinks, and the remaining ring of cornea attached to the sclerotic granulates and cicatrises over the part. Thus, when perfectly healed, you have (as a consequence of complete prolapsus) an opaque patch of cicatrised cornea in the former situation of the transparent membrane, to the posterior surface of which cicatrix the Iris is glued; the circumference is white and opaque, and the centre dark. Complete prolapsus being caused by a slough of nearly the entire cornea, is always attended with a complete loss of vision.

Partial prolapsus is frequently unattended with any inconvenience as regards the sense of sight; it is by no means a rare consequence of active inflammation in the cornea, and appears first in the form of a brownish semi-transparent tumour, which forms a small roundish projection on the surface of the cornea. The cornea around the aperture through which the iris is thrust, will exhibit a hazy appearance from the inflammation which is set up in the part, (vide Plate 2, fig. 3.) The protruding portion of iris becomes glued by inflammation to the edges of the ulcerated aperture in the cornea, and

remains permanently attached to that part throughout the rest of life.

The projecting tumour gradually disappears, and the cornea closes over it. The former situation of the tumour is indicated in after life by the appearance of a dark blue or black spot on the transparent cornea surrounded by a white opaque zone.

#### TREATMENT.

In the treatment of Prolapsus of the Iris, you will be guided by the appearance of inflammation in the other tunics of the eye. Thus, as it is often produced by acute ulcerative inflammation in the cornea, you will frequently find it necessary to pursue an antiphlogistic plan of treatment. In wounds of the cornea also, which give rise to this complaint, you will generally be obliged to deplete, for the purpose of lessening the inflammatory action which is set up in the part as a consequence of the injury. In cases then, of prolapsed Iris, the whole treatment consists in lessening irritation and inflammation in the surrounding parts, and in waiting for the shrinking of the tumour by a natural process, the treatment depending entirely upon the degree of inflammation in the cornea and other tunics. If the prolapsus is small, its reduction will be hastened by the application of the nitrate of silver; if large, great care must be observed in the application of this

remedy ; a small portion only should be touched at once. If a large portion of Iris has protruded, and the whole surface be painted with the caustic, it will now and then happen that a high degree of inflammation will follow. In small protrusions caustic may be freely applied.

The consequences of prolapsus of the Iris will depend upon the *size* and *situation* of the aperture in the cornea through which the membrane has been protruded. If the point of protrusion be situated in the axis of vision, of course the opaque spot which is left after the cornea has healed, will interfere with the free passage of the rays of light to the retina ; and the organ will, to a certain extent, be damaged. If, on the other hand, the aperture in the cornea has been of large size, you sometimes find that the pupillary margin of the Iris will be thrust through the gap, or adhere to the sides of the opening. In these cases, of course, the pupil is obliterated, and the rays of light are completely prevented from passing to the retina ; the operation for artificial pupil is then required. But if the aperture be small and nearer the circumference than the centre of the cornea, it will not be found that the sight is in any way affected by the permanent attachment of the Iris to the spot at which it had prolapsed. Irregularity of the pupil does not interfere with the healthy functions of the organ. In some individuals the pupil is naturally irregular in its shape.

## INFLAMMATION OF THE IRIS.

Inflammation of the Iris may arise from various exciting causes ; sometimes it occurs from the continued inflammation of the other tunics ; sometimes as an original disease. Iritis may be divided into three kinds: 1st, Simple Idiopathic ; 2nd, Syphilitic ; 3rd, Arthritic.

## COMMON IRITIS.

Injuries from mechanical violence, either inflicted in operations or from accident ; over exertion of the organ and exposure to an unnatural and excessive stimulus of light may give rise to the complaint. The sympathy between the retina and Iris will, of course, be the cause of morbid action. In persons then, who are occupied in the close and continued inspection of minute objects, Iritis will occasionally be met with ; various other causes may, however, produce the disease. The symptoms will be pain in the globe and orbit, increased by the motions of the eye, and intolerance of light. Febrile excitement is rarely found to accompany the first symptoms, unless in very acute cases. The first visible indication of the existence of inflammation in the iris will be the loss of its natural brilliancy, which is seen only by comparing the diseased with the sound eye ; you then observe that before any change has taken place in the colour of the Iris, it will have assumed a dull appearance. In addition to this change, the pupil will be more contracted than the one on the opposite



side ; and a faint zone of straight pink sclerotic vessels will encircle the circumference of the transparent cornea, being situated entirely in the sclerotic coat. When the Iris inflames, that inflammation is of the adhesive kind ; and consequently we have a deposit of lymph to a greater or less extent as the result of the morbid action which has been set up.

In watching the progress of a case of iritis, we find that the deposit of adhesive matter is, in the first instance, entirely interstitial, and that it commences in the central part of the tunic around the pupillary margin ; the first change in the iris then is seen round the pupil : while the effusion of lymph is purely interstitial, we observe no change in the figure of the pupil, but the delicate thin edge is thickened and the alternate contraction and dilatation of the pupil are impeded by this deposition of adhesive matter between the muscular fibres of the iris. The pupil then is contracted, and the motions of the iris are very imperfectly performed under the natural and appropriate stimulus of light upon the retina.

The effect of the interstitial effusion of adhesive matter is very soon observed, not only in the centre, but over the whole surface of the iris ; it is from this cause that a change will now take place in the colour of the affected tunic. The change of colour then in an inflamed iris is not produced by an altered condition of the fluid which is circulating through the blood vessels, but by the interstitial effusion of lymph between the muscular fibres. This lymph is of a yellow colour, and we therefore see that the colour



of an iris under the influence of inflammatory action, will depend upon the colour of the part when in an healthy state.

As the effusion takes place first at the margin of the pupil, so we find that the change of colour commences also in the inner circle of the iris around its pupillary margin, the alteration extending from this point over the entire surface of the tunic, (Plate 6, fig. 2.)

It occasionally happens that in the same individual the iris is naturally of a different colour in each Eye ; that in one the iris is blue ; in the other, green. Sometimes an iris will be half green and half blue ; in which case no mistake can be made, as this appearance is never produced by inflammation ; but in those who possess two irides of different colours, it may occasionally happen that common acute inflammation of the conjunctiva might be mistaken for a case of pure iritis ; in both you will have intolerance of light, pain, and an altered colour of the iris. Conjunctival inflammation is frequently combined with iritis, and the sclerotic zone of pink vessels will therefore in these cases be obscured or concealed beneath the tortuous vessels of the conjunctiva ; so that an injected and vascular conjunctiva with a discoloured iris will be the diagnostic marks of the nature of the complaint. If it should ever become a matter of doubt whether under such circumstances the discoloured iris be the consequence of inflammation or of other causes, you will at once be able to determine by the

condition of the pupil and the comparative brilliancy of the tunic; the colour may deceive you, the appearance of increased vascularity may lead you into error, but loss of brilliancy and a contracted or an irregular pupil which dilates and contracts slowly, are marks of distinction which are characteristic of iritis and of iritis only. By these symptoms, then, you will always be able to determine whether the iris is the seat of disease in those patients in whom the difference of colour might lead you into error.

To proceed with the symptoms of Idiopathic Iritis, it will be found that the effusion of lymph as a consequence of adhesive inflammation of the iris will, as the disease advances, be poured not only between the muscular fibres of that coat, but that it will also be deposited upon its surface; principally, however, upon its posterior surface. You are aware that in the healthy condition of the organ, the edge of the pupil is placed extremely close to the capsule of the crystalline lens; still however the parts are separated by the posterior chamber. But when the edge of the pupil is thickened by an interstitial effusion and a deposition of adhesive matter, we then find that the parts are brought into contact, and that consequently the pupillary margin of the iris touches the crystalline capsule. In consequence of this, the two parts become glued together by adhesion, sometimes throughout the whole circumference of the pupil, but generally the adhesion is partial; a small portion only of the pupillary margin being attached to the capsule of the lens.

When this is the case, the pupil is of course irregular in shape; when one part is fixed and the rest moveable, of course the pupil no longer retains its circular figure. Irregular pupil is the common consequence of iritis.

The next appearance which will be presented to your notice will be the deposition of adhesive matter in distinct patches upon the iris; sometimes blood is poured into the anterior chamber, but generally adhesive matter only (Pl. 6, Fig. 3). The situations in which you find this deposit are various; the pupillary margin, the ciliary-edge, and sometimes the anterior surface nearly covered by lymph. Adhesive matter is sometimes deposited from the iris upon the capsule of the lens. This deposit is principally supplied by the pupillary margin of the iris; and when it forms in any considerable quantity, the rays of light are completely prevented from passing to the retina; consequently temporary blindness is produced. You must be aware that in other organs (which like the iris, upon the first accession of inflammatory action assume the adhesive form of inflammation,) if a quantity of adhesive matter is poured forth which is disproportioned to the powers of organisation or absorption in the part, the lymph acts as an extraneous body, and consequently a second process is required for its removal. We see this for instance in the formation of a common abscess. We see in common abscess the induration beneath the integuments which is produced by the

effusion of lymph as a consequence of adhesive inflammation in the part. And that this indurated tumour which the absorbent vessels (the scavengers of the system) are incapable of removing by more simple means, is expelled through an external outlet by the ulcerative and suppurative process.

By this second process then, the removal of a deposit of adhesive matter is effected. In like manner it will be found that when the quantity of lymph which is thrown upon an inflamed iris is disproportioned to the absorbing or organizing vessels of the part; the formation of an abscess is the result.

An abscess which is produced from this cause, viz. from the excessive effusion of adhesive matter upon the surface of the iris, invariably bursts into the anterior chamber; the pus which is poured out falls to the bottom of the anterior chamber between the cornea and iris and thus hypopion is occasionally produced as a consequence of adhesive inflammation of the iris, in other words of iritis. *Incipient hypopion* is shown in the diagram to which I have just referred.

While these changes are going on in the iris, the pain which is at first of a dull and heavy kind, will become acute and lancinating; but the pain attending common idiopathic iritis is seldom continued. It is increased during the night, and comparatively inconsiderable during the day. Nocturnal exacerbations of suffering will generally be a characteristic mark



of distinction in cases of iritis. Local indications of inflammation of the iris are always, even from the commencement, accompanied by the appearance of a pink zone of sclerotic vessels which surround the margin of the transparent cornea.

If this disease is confined to the iris throughout its whole course, the vascularity of the conjunctiva will be inconsiderable. But it very frequently happens that every tunic of the Eye becomes affected; and in such cases the more prominent diagnostic symptoms are obscured. You cannot see the zone in consequence of conjunctival vessels; you cannot distinguish the iris from the haze of the cornea, so that it is often difficult in the last stages to determine in which tunic the disease first appeared. In very severe cases the whole of the pupillary margin of the iris is glued to the capsule of the lens, and in consequence of this adhesion the communication between the anterior and posterior chamber of the aqueous humour is cut off.

It is not unusual then to find that the iris will bulge forwards towards the cornea from the pressure of the aqueous humour in the posterior chamber. The cause of this protrusion of the iris is easily accounted for. The rational explanation is, that under such circumstances a larger portion of aqueous humour is secreted from the posterior than from the anterior chamber of the Eye; consequently, when the communication between the two chambers is closed by the adhesion of the pupil-



lary margin of the iris to the capsule of the lens, it must necessarily happen, that the more abundant secretion from behind would push forwards the iris towards the cornea.

I do not mean to infer from this, that in the healthy state of the organ a greater quantity of aqueous humour is secreted in the posterior than in the anterior chamber ; but I think that from morbid action in the part this is always the case when after a perfect adhesion of the pupil, the iris is bulged forwards. I know no other way of explaining the cause of this appearance. Leaving you, however, to form your own opinions upon this subject, I next proceed to the ultimate consequences of an uncontrolled attack of Idiopathic Iritis.

After having produced the morbid appearances which I have already described to you, it will be found that if unchecked by proper remedies, the inflammatory action which has commenced in the iris will extend to the *retina*, the *choroid*, and the *cornea* ; and will, from the change which always takes place in these textures from the continuance of uncontrolled inflammation, produce a total disorganization of the organ. The cornea becomes permanently opaque ; the pupil becomes either closed or nearly so ; the capsule of the lens, coated by adhesive matter, which afterwards becomes organised, is rendered opaque, and the retina is partially or altogether disorganized by continued vascular excitement.

In all such cases, the natural colour of the iris is completely changed, and presents the appearance of a dull opaque membrane. These, then, are the consequences of inflammation of the iris when improperly or imperfectly treated; namely, pain and intolerance of light, loss of brilliancy and the formation of a sclerotic zone, contracted pupil, adhesion of the pupil to the capsule, effusion of adhesive matter, abscess on the anterior surface of the iris producing hypopion; and, lastly, the extension of the inflammatory action to other tunics, producing either a complete or partial disorganization of the organ from loss of transparency or disturbance in the healthy functions of the retina.

Now a modification of this disease will very frequently occur as a consequence of the inoculation of a syphilitic poison. Syphilitic Iritis is one of the most common forms of the disease; and as the means of remedy for common Idiopathic Iritis and for Syphilitic Iritis are nearly the same, I shall describe to you the distinguishing appearances of the latter, before I speak of the treatment of these two forms of disease.

Syphilitic Iritis may be considered as one of the genuine secondary symptoms of the venereal disease; it usually occurs in conjunction with cutaneous eruptions, and very frequently with sore throat; but it must be considered as an occasional, and not as a constant symptom of syphilis. This, however, may be observed in other venereal symptoms. We do not,

for instance, find that an eruption on the skin, or an ulcer on the throat will invariably follow the inoculation of a poison, or the formation of a primary ulcer.

The system in some individuals will not be susceptible of receiving those impressions from the action of the poison which lead to the production of secondary symptoms, and consequently the skin and throat remain unaffected. Thus it is that in some persons the iris is more susceptible of receiving morbid impressions, from the action of a Syphilitic poison than in others, and for this reason we find that Syphilitic Iritis is an occasional, and not a constant symptom of the venereal disease. I have never however seen it where mercury has not been previously given, and I therefore consider it a compound disorder.

Now, Syphilis as it affects the skin, the throat, and the genitals, presents to our observation a train of morbid phenomena, which are as various in their appearance as they are distinct in their origin. We see that a primary sore may appear either in the form of simple excoriation, of a phagedenic ulcer, of a tubercular ulcer, or of a sloughing or gangrenous ulcer, and the fauces are secondarily affected, either by superficial ulceration, or by foul and phagedenic disease; we also see the effect of the poison upon the skin in the various modifications of pimples, pustules, vesicules, and scaly eruptions or tubercles: but Syphilis as it affects the organ of vision, is not subject to these varieties.

Syphilitic Iritis presents precisely the same appearance under all circumstances ; whether it accompanies the papular eruption or the elevated scab of *rupia prominens*, or whether it be found in combination with the squamous eruption, or uncombined with any cutaneous affection whatever ; under all these circumstances the appearances will be as follows :—

The first symptom, as in common iritis, will be pain and intolerance of light ; generally exacerbations of pain at night, and comparative ease during the day, and the pupil contracted and thickened, and generally drawn upwards and towards the inner canthus. The conjunctival vessels are generally unaffected, but the zone of sclerotic vessels around the cornea is always formed from the commencement of the disease. The colour of this zone in Syphilitic Iritis, is highly characteristic of the nature of the disease ; it is not pink, but cinnamon or rusty brown-red ; this is a good diagnostic mark of distinction between common iritis and Syphilitic Iritis.

In a short time patches of lymph are deposited on the anterior surface of the iris, and adhesions are formed at a very early period between the pupil and the capsule of the lens. The adhesive matter which is poured out is sometimes, in these cases, of a reddish hue, and the effusion is more rapid and abundant than in common iritis, consequently the adhesions of the pupil are more extensive. These are the only visible marks of distinction that I know of between Syphilitic Iritis and common iritis. I may add that



the nocturnal aggravation of pain in the globe and in the orbit, is much more frequently met with in Syphilitic Iritis, than in any other form of the disease. Perhaps, however, the best diagnostic symptoms will be afforded by the existence of a venereal poison in the system. A sore throat combined with venereal eruptions are never accompanied by pure Idiopathic Iritis. Whenever the system is affected by a venereal poison, the occurrence of inflammation of the iris will be characterised by the dusky red cinnamon zone, and the effusion of adhesive matter.

Syphilitic Iritis more frequently occurs in combination with the papular than with any of the other forms of eruption, and more frequently with the squamous than with the pustular or vesicular. This disease, if uncontrolled, will inevitably terminate in the entire destruction of the organ, which is produced in the same manner as in common iritis, namely, by the disorganization of the retina from continuous inflammation, and by the closure of the pupil from contraction of its fibres, and the organisation of adhesive matter.

The venereal form of iritis is, however, if seen in the commencement, always under the control of remedies. This is not universally the case in common iritis, for we more frequently find in common iritis, a disposition to acute inflammation in the other deep-seated tunics. In Syphilitic Iritis the disease may always be cut short before the choroid and retina



become permanently damaged by inflammation. The remedies in both cases are extremely simple; and we have not in the whole range of surgery, a more satisfactory example of the effect of medical treatment upon morbid action, than in the effects of our remedies upon iritis. The treatment will be as follows:—

#### TREATMENT.

First of the constitutional treatment. If the disease is in an acute form, namely, if the pain is excessive, and intolerance of light extreme, and the subject of the complaint is neither reduced to a state of extreme prostration of strength by previous disease nor by other causes of debility; you will in all cases extract blood from the arm. You are not to wait for a sharp, accelerated pulse and febrile excitement, but the accession of extreme pain, intolerance of light, the effusion of lymph, and contraction of the pupil, will render it necessary to lower the powers of the system by general depletion, although the pulse may not be above the natural standard of health. The quantity of blood which you are to take away will depend upon the constitution of your patient, and the degree of pain and vascularity of the part. In a robust, plethoric subject, it may be necessary to bleed to syncope. It sometimes happens, however, that general blood-letting is contra-indicated by constitutional causes of debility.

These will be the preliminary steps to the appli-

cation of a remedy which will in most cases be found infallible. That remedy will consist in producing a powerful impression upon the system by the free use of mercury; without this, bleeding, purging, and depletion will prove unavailing. It is by the use of mercury alone that iritis is to be removed. In cases then of acute iritis, and in almost all constitutions, mercury is to be your sheet anchor.

In acute inflammation of other parts, the powerful operation of this active medicine upon the capillary system must be well known to you; but in no diseases are the effects more strikingly shewn, in no diseases is its exhibition more imperiously called for than in cases of acute inflammation of the iris. You will see the iris dull and discoloured, the anterior chamber loaded with adhesive matter, and the pupil disfigured. You will see the evidence of acute inflammation in the extreme vascularity of the sclerotic, and you may purge, and deplete to extremity without saving the organ; but the moment you affect the system with mercury an immediate change is produced, the vascular zone around the cornea fades away, the adhesive deposit is absorbed, the iris regains its natural brilliancy and colour, and every appearance of morbid action in the part vanishes, and generally in a very short space of time.

The effect of mercury in these cases is almost always sure and expeditious. Now, in many cases of iritis, particularly of syphilitic iritis, in using mer-

cury to cure one disease we are either aggravating or producing another. For Iritis will frequently occur in patients who have been saturated with mercury, and who are the subjects of disease of bone, or of the most aggravated form of *trypia*. Mercury in these cases is always injurious to the constitution. But, at the same time, it is well known, that in withholding the use of this remedy we should be adding a cause of misery which is infinitely more intolerable than the other diseases; for we should be quite certain that loss of sight would be inevitable. With such an alternative then, we must forget the cause and treatment of diseases in other and less important organs to preserve entire the most valuable gift with which nature has furnished us. When, therefore, called to a case of acute iritis, after having used in the first instance those means of depletion which the system will safely bear, lose no time in arresting the progress of a disease which will shortly and inevitably extend to other parts, in which its effects are beyond the reach of our remedies. For before the choroid and the retina become disorganised, we must hasten to produce a powerful action on the system by repeated doses of mercurials, and calomel, combined with opium, is perhaps the best form in which mercury in these cases can be administered. It will be necessary to give a somewhat powerful dose. But as soon as the mercurial fætor and redness of the gums is produced, the action of the medicine may be kept up by smaller doses. *Saliva-*

*tion* is not necessary for the cure of this disease, nor to the cure of any diseases ; the system must be kept under the influence of mercury until the adhesive matter poured out has become absorbed, and the natural condition of the iris is restored, and afterwards any injurious effect which may have been produced in the constitution by the remedy may be counteracted by other treatment.

#### LOCAL TREATMENT.

During the progress of cure blisters may be applied, but not at first, when the disease is in its acute form. The effect of belladonna in dilating the pupil must be known to you ; apply it, therefore, to the palpebræ, or use it in a collyrium to prevent the contracted pupil from adhering to the capsule, otherwise the pupillary aperture may be rendered irregular, or it may be quite closed by the effusion of lymph ; the Eye should be shaded, to prevent the stimulus of light upon an irritable retina from increasing by sympathy the inflammatory disease which already exists. Your prognosis may be favourable if the disease is confined to the iris. But if you find acute inflammation of other tunics, intense redness of sclerotic, extreme pain, insensibility to light, puckered and deadened appearance in the iris, and the pupil closed either by contraction and adhesion, or by the deposit of adhesive matter ; if the disease has been allowed to run on until these changes have been produced blindness will almost invariably ensue.



## ARTHRITIC IRITIS.

I have already told you that the iris is subject to three distinct kinds of inflammation, viz. common idiopathic syphilitic, and arthritic or rheumatic inflammation.

Having described to you the two former, it now remains for me to conclude the subject of Diseases of the Iris by describing the symptoms and treatment of Arthritic Iritis.

Rheumatic inflammation of the iris differs from every other form of inflammatory action in the part, as well in its cause, as in its consequence and treatment.

The disease, as its name implies, is always produced by a transfer of that morbid action which we recognise under the terms of gout or rheumatism to the part. It is therefore invariably found to occur in those individuals who have been, or are at the time, the subjects of these diseases in other parts. Generally, however, it appears to arise from metastosis; for we most frequently find that the affection of the iris is most severe during the absence of the disorder in other parts, and very frequently an attack of gout or rheumatism in the extremities will immediately suspend the inflammatory action which was existing in the iris. On the other hand, however, it will in some cases be found that a general development of rheumatic or gouty affection of the system will accompany the disease.

Arthritic Iritis is characterized by the following



symptoms:—In the first place the pain commences in the orbit and not in the globe; this is not the case in common or syphilitic; the motions of the globe in the orbit are not attended with pain, an uneasy sensation is soon felt in the globe, but acute lancinating pain does not affect that part. The pain is referred to surrounding parts, and is always severe, and is recognized by the patient as being of a rheumatic kind. The zone which surrounds the margin of the transparent cornea, *and* a dull, deadened, and discoloured appearance of the iris are immediately produced. The appearance of the iris itself does not differ much from that which we observe in common iritis; but the appearance of the zone will always afford a distinct diagnostic sign of the character of the inflammation, it is not a bright pink nor a cinnamon brown, but a dull, dirty, rusty red. The form, as well as the colour of the zone, is also peculiar. In other forms of iritis the red sclerotic vessels reach as far as the margin of the cornea; in Arthritic Iritis a space is left between the circumference of the cornea and the red zone which surrounds it. This space is of the natural colour of the sclerotic, and consequently a whitish and extremely narrow ring will be seen between the circumference of the transparent membrane and the radiating zone of vessels by which it is encircled.

A *natural* appearance which is occasionally met with, may be, and often is mistaken for, the *morbid* appearance which I am describing. Rheumatic inflammation of the iris is frequently met with in old

persons ; and in age, it is very common to find that the whole or a part of the circumference of the cornea, will become naturally whitened and opaque. The narrow white circle which is thus produced is called *arcus senilis* ; now when the iris becomes dark and dusky, in consequence of inflammation, you will invariably find that the *arcus senilis* is rendered more distinct in that eye, in consequence of the contrast which is produced by a greater darkness and depth of colour in the back-ground, which is afforded by the diseased iris, and thus the *arcus senilis* being indistinct in the sound organ in consequence of the brilliancy of the iris, and at the same time prominently apparent in the other in consequence of the altered condition of that tunic, you will be struck with the contrast, and may consider the appearance which is thus presented, as corresponding with the description that I have given you of the white space which is left in cases of Arthritic Iritis, between the cornea and the zone of sclerotic vessels. You must, therefore, remember that the whole circle, in cases of Arthritic Iris, is in the sclerotic, and not in the margin of the cornea ; for the white circle in the cornea, in those patients who are the subject of *arcus senilis*, will always be developed in every case of iritis, for the reason I have mentioned, whether that iritis shall be found to arise from common or specific inflammation.

After the occurrence of pain in the orbit, discolouration of the iris, and the formation of a zone

joining the margin of the cornea, the pupil, which has in the first instance contracted, will form adhesions to the capsule of the lens; but it would appear that the effusion of lymph is sparingly produced, and that it is confined principally to the posterior surface of the iris; for although the pupil is glued by adhesion to the capsule, we never, in the first instance, observe any patches of adhesive matter upon the anterior surface of the iris, as in common or syphilitic iritis.

This, then, is another diagnostic symptom, that in Arthritic Iritis you find at first no effusion of lymph in patches upon the surface of the membrane. A permanently contracted state of the pupillary aperture, not unfrequently takes place, even in the space of twenty-four hours, in cases of Arthritic Iritis, without any adhesion of the iris to the capsule of the lens, but from a morbid interstitial change in the iris itself. The next symptom will be intolerance of light, not however always, but there is absence of *darting pain* on exposure to light. If the disease has been of long standing, viz., if the patient has been the subject of repeated attacks of this complaint, a permanent opacity will be produced in the capsule of the lens, and in many cases in the lens itself.

This opacity is not produced by the effusion and organization of a distinct layer of lymph, as in other cases of iritis, but by an altered condition of the capsule. Capsular and lenticular cataract, then,

are not unfrequently produced by repeated and uncontrolled attacks of the disease I am describing.

In speaking of the two other forms of iritis, I told you that if inflammation was extremely acute, and if no remedies were applied, that the extension of the inflammatory action to the deep-seated and adjoining tunics, would inevitably occasion a complete disorganization of the iris, retina, and perhaps of the entire organ. This is not the case in Arthritic Iritis; for in this disease, even if uncontrolled by the application of proper remedies, it will generally happen that after a certain time the inflammatory action spontaneously subsides, and leaves the organ nearly in its former condition. The iris will to a certain extent, regain its former brilliancy, and the retina will resume its healthy functions. One part of the Eye however, will show a trace of previous morbid action, and that will be the pupillary aperture. It is from the consequences of the disease in the capsule and in the lens, that Arthritic Iritis is productive of permanently destructive effects upon the organ; for the pupil will, after each attack, become more contracted, and the capsule and lens more opaque, until at length the rays of light are completely excluded from the retina, and consequently the sight destroyed.

The influence of the disease, then, upon the pupillary aperture and capsule of the lens affords us the principal cause for apprehension; the closure of that aperture, and the opacity of the capsule and lens being almost always the result of



repeated accessions of the disease in the part. A single attack of Arthritic Iritis is very rarely attended by destruction of the sense of vision. It is from numerous, neglected, or improperly treated attacks, that the disease occasions blindness. By the application of proper remedies, you will in almost every case so far control the disease, as to prevent the permanent changes which I have described from occurring.

#### TREATMENT.

The treatment will be as follows. In common and in syphilitic iritis I told you that the exhibition of mercury was absolutely necessary for the cure of the disease. In pure rheumatic iritis, however, this remedy is hardly ever required, and in some cases ptialism will aggravate the complaint. It is, therefore, very material that the distinction between the two forms of disease should be well known, since the means of removing one might prove an exciting cause to the other.

The remedies for Arthritic Iritis are perfectly inert in both common and syphilitic inflammation of the tunics. Those remedies are as follows:—General and active antiphlogistic measures are hardly ever required. If, however, there be pain extremely severe, and febrile excitement, it may be necessary to abstract blood from the arm; but generally, local bleeding by cupping on the temple and the free application of leeches will prove sufficient.



Counter irritation, effected by the application of blisters, will also be found highly useful.

If intolerance of light is severe, the exclusion of it, by a green shade or veil, will of course be necessary ; tepid fomentations are more useful than the application of cold. The medicines which you exhibit in the first instance will be given with a view of acting freely upon the bowels, and thus clearing the alimentary canal of its contents.

You afterwards administer those remedies which are found to be beneficial in cases of acute or chronic rheumatism in other parts. You are aware, I suppose, that in some cases of rheumatism the exhibition of bark has been found useful. This medicine is an exceedingly good one in rheumatic iritis, particularly when combined with an alkali. The following will be found a useful formula :

R. Pulv. Cinchon. gr. v.  
Sodæ Carb. ʒ j.

Fiat pulv. ter in die sumend.

In all cases, restore or insure healthy and natural secretions by antimonials and small doses of mercury. Use mercury in these cases, not to act as a poison by affecting the salivary system, but as an alterative to increase and improve the system generally. Whilst you are giving these medicines, the patient is to avoid all stimulants in diet, such as wine, malt liquor, and animal food.

Now it will occasionally happen, that a chronic

form of inflammation will remain after the more urgent symptoms have subsided, and in some few instances it may be necessary to affect the system with mercury; but these are not pure cases of Arthritic Iritis,—they are cases in which common chronic inflammation supervenes upon the other disease. The appearance of the eye partakes more of the character of common iritis; the iris remains dull, the zone approaches the cornea, and there is pain in the globe.

In such mixed cases mercury may be necessary; but in pure Arthritic Iritis, mercury is only required as an alterative, for the disease will yield to the other remedies I have described, if it occurs in a remediable form.

#### SCLEROTIC.

It rarely happens that the sclerotic is alone the seat of disease, for the cornea, iris, and choroid, usually become affected also. And where you find sclerotic inflammation as an original disease, in most, if not in all, of these cases the patient will be under the influence of syphilis of mercury or rheumatism, and often of all three.

Scleritis is most frequently met with in those individuals who are the subjects of mercurial rheumatism, and who have previously been subject to the influence of a venereal poison. If the term pseudo syphilitic be admissible, it may be applied to such a disease as the one I am now describing. Scleritis, therefore, for want of a better term, may be considered as a pseudo syphilitic complaint.

The symptoms in the commencement will be as follows:—

1st. Obtuse pain in the eyeball, the pain increased by the motions of the globe in the orbit, and intolerance of light. Febrile excitement will not form one of the characters of the disease. The system, in the first instance, is not necessarily affected by the inflammatory action which is set up in the sclerotic. You find that the disease will very often occur in cachectic constitutions, and that consequently constitutional derangement will be present; but this will have arisen from a previous exciting cause, and not from sympathy with an inflamed sclerotic.

The local indications of the existence of sclerotic inflammation, will consist in the appearance of a pink zone around the margin of the cornea. After a time the whole tunic becomes changed in colour by the injection of its vessels with red blood, but at first, you observe a zone only, (Plate 7, fig. 1.)

The next visible symptom will be a contraction of the pupil. This contraction in scleratitis will take place before any appearance of disease in the iris. Intolerance of light will invariably accompany sclerotic inflammation; and wherever we have intolerance, we have also, to a greater or less extent, a contraction of the pupil; when symptomatic of this affection it is, however, generally active.

These, then, are the local indications of the first stage of pure sclerotic inflammation. After a time the iris will become inflamed, and it will then be

difficult to determine in which of the two coats the disease has commenced. But if seen in the commencement, you will be able to determine by the symptoms I have described to you. Plate 7, fig. 2, shows the appearance of corneitis and iritis, in which it will be seen that the diffused blush over the sclerotic is wanting, the zone, however, being distinctly marked. Chronic sclerotitis is shown in fig. 3.

#### TREATMENT.

You will recollect that pure inflammation of the sclerotic is not generally an active disease, that the accompanying conjunctival inflammation is comparatively trivial, and that your patient nine times out of ten will be cachectic or mercurialized. You will remember, at the same time, that although the disease assumes a chronic character, yet that the nature of the affected parts will render any continuance of morbid action highly dangerous to the safety of the organ. We are therefore called upon to use the most prompt means of checking the disease at the onset, lest by slow and increased vascular action the functions of the retina may become permanently disturbed or destroyed.

Now in this disease, as in all inflammatory affections of the deep-seated tunics of the eye; local depletion will be almost useless. When the sclerotic, the choroid, the iris, or the retina become inflamed, general depletion is required. In the first place, you are to lessen action by the abstraction of

blood from the arm, in quantity proportioned to the age and constitution of the patient, and to the degree of vascular excitement in the part. If general and active depletion is forbidden by debility and prostration of strength, you may rest assured that the organ will be damaged to a greater or less extent. It is by general depletion alone, that you can hope to preserve an eye which is the subject of severe acute sclerotic inflammation. Leeching is very nearly useless. Cupping is a far better mode of abstracting blood locally in these cases, because you abstract blood more quickly, and when taken from the temple the greater part will be arterial; you know, of course, that bleeding from an artery produces a more powerful effect upon the system than bleeding from a vein. By cupping therefore on the temple, you deplete, to a certain extent, both locally and generally; but the extent of general depletion in these cases is very limited. In some, however, you will have to depend entirely upon this mode of abstracting blood; of course it is necessary to act freely upon the bowels by purging. If by such means you are unable to control the disease, it will be proper to depress the powers of the system by keeping up continued nausea.

These are the three modes of lessening action in severe scleratitis, bleeding, purging, and keeping up continued nausea.

If your patient is saturated with mercury, there can be no doubt that the excessive and injudicious use of



that medicine is the exciting cause of the disease. I need hardly tell you that, under such circumstances, its abuse is to be discontinued. Yet, notwithstanding this, you must trust principally to the future exhibition of mercury for a permanent and perfect cure.

The excessive use of mercury induces and aggravates the disease; the moderate use of it is beneficial. If the subject of this disease is debilitated and irritable you administer opiates, and to prevent the known effects of opium upon the different secretions, you combine it with a diaphoretic. You still farther endeavour to allay irritability by the use of sarsaparilla, there is little or no use in giving small doses. Should the patient be under the influence of mercury, you are to combine with your dose of sarsaparilla, a small quantity of some one of the mineral acids. The tonic and alterative effects of the nitric and sulphuric acids in cases of cachexia from ptialism, must be well known to you. But in severe cases of scleritis, where the iris and cornea have become involved in the disease, your sheet anchor is mercury given as an alterative.

When we give mercury in ophthalmic, as well as in other diseases, with a view of what is called affecting the system, we are too much in the habit of estimating the extent of its operation by the presence of mercurial foetor in the breath, inflamed and spongy gums, or profuse salivary secretion. It is too much the custom to push on the remedy until one or other of these three signs of its action shall be manifested.

It is true that they are proofs of its specific operation upon the body; but it is equally true that the system may be affected without any of these symptoms; and that consequently a powerful operation upon disease may be produced without salivation.

In many venereal affections which would yield to the sparing and judicious use of mercury, ptyalism will increase the disorder, so it is in inflammation of the sclerotic. We sometimes find that the disease is appearing in its most severe form when the system is saturated with mercury, and disappearing under your remedies as ptyalism is subsiding; yet in many cases the future exhibition of the remedy, in small doses, will be absolutely necessary for the permanent cure of the disease.

Whilst you are giving these smaller doses, recollect that you are to be guided by the two following rules :—

If the disease is yielding, although no red line is to be seen on the gums, you are not to increase your dose of mercury, with a view of affecting the salivary system. The effect of the remedy upon the disease is a sufficient proof that the system is sufficiently affected.

If, on the other hand, the disease is stationary, although the gums are affected, and salivation is commencing, you are not to push your remedy still farther, in the hope of being able to control the morbid condition of the sclerotic, by drenching your patient with mercurials. The slightest indication of a mercurial action upon the salivary

organs, will assure you that you have gone far enough. If you excite ptyalism, you will increase the original disease, and lay the foundation for others of the most serious nature. When the disorder is manifestly under the influence of your treatment, never think of trying to produce inflamed gums, but give mercury as sparingly as possible.

Well, then, after you have by proper means, reduced the disease to a chronic form, at which time a purple zone only will be left (vide Plate 7, Fig. 3), and supposing that the patient is no longer the subject of mercurial salivation, the best treatment will consist in establishing counter-irritation, giving tonics in diet and medicine, with small doses of mercury combined with a mild purgative occasionally; and where there is much irritability and intolerance, an opiate, or some form of anodyne may perhaps be required; this, however, is rarely the case. A green shade should be worn; with regard to collyria they are generally useless, the eye and eyelids should, however, be frequently fomented with warm water.

These, are the means which you are to adopt in cases of pseudo syphilitic scleritis. It will, however, in many cases be necessary to suspend the use even of small doses of mercury during the cure, and having allowed the system to recover, again to have recourse to the remedy. In highly irritable constitutions, where mercury is obviously producing injurious constitutional effects, we must

trust to tonics, the exhibition of sarsaparilla, antimonials, and opiates, with counter-irritants.

Sclerotitis is liable to recur in a chronic form, until the general health has been perfectly restored; indeed, in some cases, it will be found that the patient will be subject to a return of the complaint for months, and even for years.

#### STAPHYLOMA OF THE SCLEROTIC.

The Sclerotic, like the cornea, is subject to staphylomatous enlargements. Staphyloma of the Sclerotic may be produced, either by mechanical injury, or by a general thinning and absorption of its coats, from the pressure of the parts beneath.

In Staphyloma, produced by a wound, namely, by the bulging forwards of the newly formed parts during the healing process, you see a circumscribed blue semi-opaque tumour occupying the exact situation of the wound, the remaining Sclerotic being perfectly healthy. In the other species of Staphyloma, where we have extensive and general thinning of the membrane, the disease is produced by a morbid inflammatory enlargement of the choroid coat beneath, or of hydrophthalmia, (Plate 5, fig. 2.)

Staphyloma produced by breach of the Sclerotic is an incurable complaint; no medical treatment, no application, and no operation, can be of the slightest benefit to the patient. The same may be



said of the other form of the disorder. It is frequently noticed as a symptom of amaurosis, and may be, perhaps, mistaken for fungoid disease.

In fungus, however, which has become so far developed, as to resemble this condition of the Sclerotic, the colour is more of a dull leaden hue; the venous congestion, and vascularity of the parts is considerably greater, and the progress of the disease more rapid. Generally, Staphyloma of the Sclerotic, is produced as a consequence of Choroiditis, and this is the only visible symptom by which the existence of choroid inflammation can be ascertained.

It is most probable, that in all severe affections of the Iris and Sclerotic, the Choroid is, more or less, involved in the disease; and, on the contrary, it may happen, in some cases, that the Choroid may be the first seat of inflammation, which extends to these tunics, and is thus first recognised in combination with morbid vascular excitement in other parts. Now, we distinctly observe the first changes produced by diseases in the Iris, Cornea, and Sclerotic; whilst in the Choroid, we have to form our obscure diagnosis, from the consequences of morbid action as affecting other structures.

Unless, therefore, we are to consider the formation of a red zone, (which is, as you know, the characteristic sign of inflammation both in Sclerotic and Iris), unless this symptom could be proved, as decidedly belonging to an inflamed Choroid, we have no grounds upon which to form a diagnosis. From



what we know, I should say that acute Choroiditis is never an idiopathic and separate disease, or that it invariably occurs in combination with some inflammatory action of the Iris or Sclerotic.

An enlargement of the Choroid tunic, from chronic disease, is clearly indicated by its effect upon the Sclerotic, producing general and diffused staphyloma, from pressure and absorption; and this symptom is positively the only one, by which a morbid condition of the Choroid, can with any certainty be ascertained. A description of the symptoms of acute Choroiditis must be entirely founded on conjecture. The symptoms of chronic Choroiditis are shown by a bulging of the enlarged membrane, behind a thinned and Staphylomatous Sclerotic. This, appearance, however, is also produced by hydroptalmia.

#### HYDROPTALMIA.

Hydroptalmia, or a dropsical accumulation of the humours of the eye, is usually produced by long continued chronic inflammation of the deep seated tunics. The symptoms can hardly be mistaken. The globe is generally enlarged, and the aqueous humour secreted more than the vitreous. Thus, if the cornea remain transparent, you see the anterior chamber enormously enlarged.

Now and then the cornea becomes more or less opaque; not usually, however, in the commencement.

Amaurosis from distension of the Retina is frequently found to occur in the earlier stages of the complaint, and always in its most aggravated form. Hydroptalmia is not attended by any constitutional disturbance. Local irritation on the lids, is often produced by the projection of the globe, and, therefore, Surgical treatment becomes necessary. You may in these cases afford by operation, either temporary or permanent relief. The palliative treatment will consist in evacuating part of the increased secretion of the humors through an aperture in the Cornea or Sclerotic, made by the point of a cataract knife. The disease will, however, return after this operation. The only radical cure will consist in the removal of the forepart of the cornea. The operation is the same as that which we perform for staphyloma; the humours are of course evacuated, and the globe permanently collapses. This remedy is worse than the disease, and ought never to be had recourse to.

An occasional evacuation of the aqueous humour by puncture will generally be the best plan of treatment. Neither local applications, nor constitutional remedies exert any beneficial influence on the disease, which is incurable if chronic, and of long standing, and almost always, even when seen at its commencement. In some recent cases, however, the exhibition of mercury in combination with iodide of potash has been found useful.

We have already seen that internal inflammation of the deep-seated tunics of the eye, may produce an enlargement of the globe, in the form of staphyloma, and of dropsy or hydrophthalmia. It sometimes, however, will happen, that an opposite effect will result from the same cause ; for an occasional consequence of continued inflammation will be a complete wasting of the contents of the eyeball.

This affection is called *Atrophia Oculi* ; the diminution commences as the inflammatory action is subsiding. It is preceded by amaurosis from previous disease, and there is no visible change of structure ; it is a gradual absorption of the organ, the globe first becomes unnaturally soft, and afterwards flaccid. The lids gradually fall in, and finally the part shrinks up to the size of a grain of hemp-seed, leaving the appearance of a hollow orbit, or rather an emptied orbit. Wounds of the globe have occasionally been followed by this disease, which is completely beyond the reach of medical and surgical attempts at remedy.

## SYNCHYSIS.

Another very curious morbid change is sometimes produced by chronic inflammation of the internal tunics of the eye. The disease often occurs without any obvious cause. It consists in a melting down

or softening of the vitreous humour, that part becoming of a remarkably fluid consistence.

In consequence of a loss of a portion of vitreous humour from absorption, and of the very fluid state of the remaining portion, the following result is met with in the appearance of the iris. In colour, in form, and as regards its naturally brilliant radiated appearance, the part apparently remains unaltered; but in consequence of the ciliary ligament becoming relaxed from the flaccid state of the globe, and the natural support being taken from behind the iris, by a partial absorption, and conversion of the vitreous humour into a more fluid state; from these causes, the iris instead of presenting its naturally tense appearance, will be observed in constant motion, whenever the globe is moved in the slightest degree.

This motion of the iris is peculiar, it is tremulous and quivering, and in addition to this, a fluctuation of the aqueous humour is seen in the anterior chamber; the affection is by no means rare.

You will recollect, then, that a tremulous iris is a symptom of the melting down or softening of the vitreous humour, and that a relaxed state of the tunics from diminution in the contents of the globe will be the cause which produces this alteration in the appearance of the part.

This morbid affection is not unfrequently accompanied by an opacity of the crystalline lens. In some cases the capsule and part of the lens will

become converted into a chalky substance, and distinguished by their peculiar whiteness, and by a very diminished size of the lens. In most cases of Synchysis with tremulous iris, partial, and sometimes complete loss of sight is the consequence.

An operation, therefore, for the extraction of an opaque lens, which is sometimes met with in these cases, would be altogether useless. The partial absorption of the vitreous humour is inconsiderable, so that no visible change is produced in the size and shape of the globe. Synchysis Oculi is an incurable disease. The functions of the organ are generally disturbed or completely destroyed, whilst the appearance of disease is, as I have told you, limited to the tremulous condition of the iris, and the appearance of a fluctuating aqueous humour. This complaint is not necessarily attended, in its earlier stages, by loss of vision. I have met with many patients the subjects of it, whose sight has been unimpaired. I next come to diseases of the

## RETINA.

The two idiopathic diseases which I shall describe to you, will be inflammation and paralysis of that tunic.

Inflammation of the retina, or Retinitis, is an extremely rare disease, and almost always destroys vision; the symptoms are intolerable darting and



distracting pain, extending from the globe to the back part of the head, the appearance of bright sparks and flashes of light, with total blindness in an hour or two. On examining the eye there is no evidence of inflammation in the other tunics; the pupil is extremely dilated and motionless, and the stimulus of light produces no aggravation of the symptoms: increased irritability produces intolerance; acute inflammation of the retina produces total paralysis. The choroid and sclerotic become inflamed in the progress of the disease (vide Pl. 6, Fig. 1); but the sight is always destroyed before you see any marks of increased vascularity. The symptoms of this complaint can never be mistaken, but we are unacquainted with the causes; the consequences are, for the most part, fatal to the organ; the treatment is too clearly indicated to require a minute description. Active general depletion will of course be required, antiphlogistic measures are, however, merely palliative. The patient's sufferings may be alleviated, but the functions of the retina will, most probably, be destroyed, before any remedies can be brought into operation.

In all cases, then, where you have darting, distracting pain, dilated pupil, and total blindness and insensibility to light, produced in a few hours after the first accession of disease in the part, the prognosis will always be unfavorable, for these are the symptoms of acute Retinitis.

## AMAUROSIS.

Amaurosis or Gutta Serena is either functional or organic : by functional amaurosis, we understand a temporary or permanent disturbance, or destruction of the functions of the retina, without any sensible alteration of structure. By organic amaurosis, we mean disorganization from change of structure of the retina, or of other parts connected with it, producing blindness. Organic amaurosis admits of no remedy, it will be quite impossible to remove the cause. It may be occasioned by the mechanical pressure of tumours upon the optic nerve, or within the globe, by extravasation between the choroid and retina, or by the change of texture which follows dropsy, fungus, or other organic diseases, which are beyond the reach of medical treatment, or by concussion of the globe. In all cases which are considered as organic amaurosis the retina or optic nerve is disorganized. Functional amaurosis arises from various causes ; congestion is one of the most frequent.

On the other hand, a disturbance in the functions of the retina may occur from a diametrically opposite cause ; for instead of congestion you will find a deficient circulation in the part, and consequently an exsanguine appearance both of the organ of vision, as well as of every other texture will be produced. In both cases, the disease may be attributed to an

unnatural and altered condition of the circulation through the vessels of the retina, and in the system generally.

In other cases an immediate effect is produced upon the retina and optic nerve, from a sympathetic impression, which is made upon the brain by various causes of nervous excitement, totally independent of any change in the circulating system. Intense anxiety, and various mental emotions, will give rise to the production of partial or perfect amaurosis. Different stimuli may produce the same effect. Thus from exposure of the organ to an unnatural stimulus of light, or from unnatural excitement occasioned by the examination of minute objects, and from various other causes of morbid action which operate directly and locally upon the retina, we are furnished with examples of the effects of unnatural stimuli upon the part in producing amaurosis.

When a complete or partial loss of vision is occasioned by an altered circulation, or by a disturbed state of the functions of the retina from sympathy with other organs, or from an immediate impression made by local stimuli upon the part, but little change will be observed, in the first instance, in the appearance of the globe. We have altered action, but no alteration of its structure.

This is frequently the case in organic amaurosis; and, therefore, the distinction between the two forms of disease will be found not always in the local appearance, but in the constitutional symptoms which

accompany the complaint. Now, independently of the direct application of a morbid stimulant to the part, the functions of the retina will frequently be disturbed, from sympathy with the digestive and other important organs of the body; and most of the causes which tend to derange the nervous and vascular system generally, will occasionally give rise to the production of this disorder; for the disease will occur, not only in those who have over-exerted the organ, in the constant examination of minute objects, or in exposing the part to an unnatural stimulus of light; we not only meet with it in our patients who have induced a morbid action in the part, from the direct application of a cause of morbid excitement, but we find paralysis of the retina will be often produced as a consequence of disturbance in the functions of the uterus, and from nervous exhaustion occasioned by various distant causes; and sometimes the disease is the result of long continued and severe dyspepsia.

Occasionally no apparent cause can be assigned for the complaint, as it will occur in individuals whose general health is, as far as we have an opportunity of judging, perfectly good, and in whom paralysis of the retina is the only indication of morbid action in any part of the system.

The apparent origin of amaurosis will of course assist you in your Prognosis; for according to the control which you have over the constitutional causes and the effects produced by local causes which

give rise to the complaint, will be the probability of a favourable result from your remedies. From whatever circumstances arising, the symptoms of amaurosis are subject to an infinite variety, and the disease will occur at all ages ; its progress is uncertain. I will, therefore, mention to you its ordinary symptoms, and you will recollect that they are found to occur in no regular order, and that only a few of them may be present, although the functions of the organ are destroyed.

In some persons the disease will be first indicated by an alteration in the visual axis, the patient becomes either short or long-sighted. In others, again, an indistinctness of vision will take place, or perhaps a clouded haziness is seen constantly encircling surrounding objects. Now and then a black spot is seen, or perhaps numerous floating bodies are described as constantly before the eyes ; these are compared to cobwebs or feathers, or to other flocculent substances which they apparently resemble. The appearance, however, of small floating semi-transparent bodies before the eyes, is not in itself to be considered as a symptom of amaurosis.

This affection, which is known by the term of *Muscae Volitantes*, is extremely common, frequently existing throughout the whole of life, without interfering with the sense of vision. The appearance, however, of muscæ volitantes is met with as a concomitant symptom of amaurosis ; but then the clearness of vision is always to a certain extent



impaired. There are some persons who in the first stage of amaurosis, will complain of seeing flashes of light, or luminous spectra. This is always an unfavourable symptom, for it is generally followed by irremediable blindness.

The retina may be rendered acutely sensible, and objects appear unusually and painfully bright; and again, they may appear of an unnatural colour but distorted in shape. Some amaurotic patients are nearly blind during the day, and in the evening, when the stimulus of light is lessened, the sense of vision returns; and vice versa; there are others in whom vision is only perfect during the day time. In the first case diminished light occasions a dilated state of the pupil, and as the central portion only of the retina is affected, the rays pass through the enlarged aperture in the iris, to the surrounding healthy surface of nervous expansion. In the other case, the retina is rendered morbidly insensible to its appropriate stimulus, the consequences of a *strong* light thrown upon the part, must therefore be obvious.

These then are the most common symptoms of incipient amaurosis; but as the disease increases, a visible alteration in one part of the organ is produced: without any marks of active inflammation, and frequently without any appearance of altered vascular action, a change will take place in the pupillary aperture, subject however to variety.

The most common alteration consists in a dilated

and motionless state of the pupil; in rare cases it is contracted; now and then, however, retaining its natural power of motion; but generally the pupil, whether contracted or dilated, is motionless. A curious phenomenon is sometimes observed in the eyes of amaurotic individuals, which affords a beautiful illustration of the sympathy which naturally exists between the two organs. A patient is brought to you perfectly blind in one eye; you then examine the condition of the iris and the power of contraction in the two pupils together; they both contract and dilate under the stimulus of different degrees of light. In these cases you may suppose that the impressions made upon the retina of the amaurotic Eye is the cause of the different motions of the pupil. This is not really the case; for if you close the healthy Eye you will see that the pupil of the other is motionless. It is from the sympathy which exists between the two that the impression made upon the one produces an effect upon the other; thus in examining an amaurotic Eye in which the motions of the iris are apparently perfect, it is always necessary to close the opposite one, when the real influence of sympathy between the retina and iris of the diseased Eye will be seen. In some cases, however, in which both are amaurotic, the motions of the iris will be performed naturally; but in the great majority the condition of the pupil will afford a diagnostic indication of a paralyzed retina.

In addition to the symptoms which I have men-

tioned, we sometimes meet with amaurotic patients, who from the commencement of the disease complain of pain, either in the orbit, forehead, or side of the head; dizziness or vertigo; and dull pain in the motions of the globe: these, however, are only occasionally present; the sight may be destroyed without any sensation of pain or uneasiness. In many cases the pupil will lose its natural brilliancy in consequence of a change which is produced in the vitreous humour, which will assume a greenish colour, without losing its transparency; this change in the natural appearance of the part has been called glaucoma (vide Plate 11, Fig. 3); glaucoma is not necessarily a sign of amaurosis; many persons whose vision is perfect are glaucomatous. When this appearance accompanies amaurosis the case is generally hopeless.

By whatever symptoms amaurosis is first ushered in, it will, in most cases, happen, that if uncontrolled by remedy the disease will terminate in a total privation of sight in the affected organ. In organic amaurosis when you find that altered action is accompanied by altered structure, the loss of sight is inevitable in spite of all remedies. But incipient amaurosis, which is produced or kept up by sympathy with a disordered state of the digestive or other organs, is, if neglected, equally liable to produce total blindness. In most instances, however, of sympathetic affections of the retina from disease in other organs, the complaint is in its commencement under the control of medical treat-

ment. The appearance of an amaurotic patient is highly characteristic of the nature of his complaint ; he has a peculiar vacant stare, looking directly before him as if “staring into space.” By this one symptom you will often distinguish amaurosis, combined with a partial opacity of the humours, from cataract.

#### TREATMENT.

Amaurosis, as I told you, is sometimes attended by congestion, and sometimes by want of activity and energy of circulation in the part, and now and then by a functional derangement in the nervous system, which is unattended by any obvious indication of altered action. In congestive amaurosis you observe to a greater or less extent, a turgid state of the veins of the head, and of the vessels of the conjunctiva ; it is usually met with in plethoric subjects. In such cases both general and local depletion are required ; you administer, in the first instance, a brisk cathartic. If you have reason to believe that the disease is kept up by sympathy with a morbid condition of the digestive or other organs, you will use those remedies which are best calculated to remove the existing cause ; your patient will of course avoid stimulants, and be kept upon low diet ; your object will be to lessen the action, and consequently anti-phlogistic measures must be adopted.

In the next place you are to give mercury with a

view of affecting the system, and if after a few weeks the exhibition of this remedy should be attended by no alleviation of the complaint, the case will probably terminate unfavourably.

Mercury is as much a specific in congestive functional amaurosis as it is in syphilitic iritis; if the exhibition of mercury should fail to effect a cure, all other remedies will probably be useless. How mercury acts in these cases has not been explained; that it produces a salutary effect by its operation upon the capillary system is well known; farther than this we know but little.

In congestive functional amaurosis, then, you deplete and affect the system with mercury, attending at the same time to the healthy condition of the constitution generally. In the incipient form of the disease these remedies will arrest, and in many cases remove, the accession of morbid action in the part; but when the disease has been allowed to gain ground from neglect, and the sense of vision is lost, or nearly so, you will hardly ever be able to save the organ. Incipient amaurosis is under our control; complete amaurosis is rarely benefited by medical treatment.



## ASTHENIC AMAUROSIS.

In Asthenic Amaurosis the circulation is feeble, the conjunctiva blanched, the sclerotic of a pearly white colour, and the countenance exsanguine, it is produced by exhaustion of the powers of the system from various causes. Repeated hæmorrhages, profuse floodings in females, and over-nursing may be assigned as causes for the disease in some cases; in both sexes amaurosis may arise from the debilitating effects of excessive sexual indulgence; in fact, from all those causes which tend to produce exhaustion in the powers of the nervous system.

This form of disease is rarely met with in advanced age; the treatment consists in giving alterative doses of mercury and tonics in the way of medicine and diet. In some cases of Asthenic Amaurosis, I have seen benefit derived from the use of strychnine administered internally, and used as a local counter-irritant; in others from veratrine, employed in the same way. In one or two instances electricity has appeared to be useful, but our treatment must in some measure be experimental in most cases, and therefore, I advise you to give a very guarded prognosis, when you are called to a patient, the subject of this complaint.

## CATARACT.

Whenever the crystalline lens or its capsule becomes opaque, instead of preserving their natural transparency, that affection is called cataract. Cataract, then, is an opacity of the lens, of its capsule, or of both. The existence of the cataract is known by a greater or less degree of opacity, immediately behind the pupil. The change from transparency to opacity in the lens and its capsule, may occur as an idiopathic disease, as the effect of inflammation which has extended from surrounding parts to those textures, or as a consequence of mechanical injury, such as wounds, &c. The cause of idiopathic cataract is not known, it will occur in all ages and in all constitutions, and is usually rather slow in its progress; it is generally met with in both eyes of the same person; two cataracts are sometimes formed together, more frequently in succession. When the complaint arises from inflammatory action or mechanical injury, the part becomes more quickly opaque, a day or two being sometimes sufficient to produce a development of the complaint; and its existence in one eye will not lead you to expect its subsequent occurrence in the other.

With regard to the symptoms, the sight is generally first weakened; distant objects are distinguished with difficulty; after a time nearer objects are

rendered indistinct, and appear as if seen through a mist.

In the early stage of the complaint, a central spot of opacity is, now and then, first formed, which will completely intercept the rays of light when the pupil is closed, but which is not large enough to obscure vision when the pupil is dilated, for then the light will pass to the retina through the transparent circumference of the lens. In these cases the patient will see tolerably well in a darkened room, or with his back to the light, in consequence of the pupil being more dilated than under the impression of a strong light. The application of belladonna will of course improve the sense of vision. When the change of structure has been general over the whole of the crystalline, a dilated pupil does not at all assist in improving vision. The patient complains of a constant mist before the eyes, objects appear dim, but not altered in form or colour. The appearance of a lighted candle is altered, for the flame appears surrounded by a halo.

This is an attendant upon amaurosis and glaucoma, but the two diseases may be distinguished by the following symptoms. In cataract the halo is always white. In amaurosis, the halo is usually of different colours. In cataract, uncombined with other disease, the patient never describes the appearance of floating bodies or flashes of light before the eyes, and the complaint is never attended by pain or uneasy sensation of the globe; the opacity is im-

mediately behind the pupil, and to be seen laterally ; in glaucoma, the opacity is deep seated, and not fixed to one spot close to the pupil.

The motions of the pupil are natural ; this is rarely the case in amaurosis, and never, when amaurosis is combined with a degree of glaucoma, which is sufficient to occasion the appearance of incipient cataract. In cataract, uncombined with amaurosis, the patient is always able to distinguish light from darkness ; although, in other respects, the sight may be altogether destroyed ; and the imperfection of sight is accounted for, by the visible alteration in the condition of the lens. This is never the case in amaurosis, and the diagnosis is material, for we have no time to lose in cases of amaurosis, while in cataract, the delay of remedies is immaterial. The opacity of the lens and its capsule, is attended by various morbid changes of texture. The part is sometimes hard, almost of a horny consistence, in rare cases ossified again, a natural degree of firmness is met with in others ; a lens often becomes soft, being of the consistence of cream ; the colour varies very much, yellow, blue, silvery white, speckled, striated, brown, black, or pearl-coloured cataracts, are in different individuals to be met with. Moreover, the colour of a lens which has been extracted, will not always correspond with its appearance before its removal.

As different operations are required for cataracts of different consistence, it will, of course, be very material that your diagnosis should be correct and

clear. In many cases, we may form a correct opinion respecting the precise condition of the opaque lens or its capsule, by diagnostic marks of distinction, but our diagnosis must be founded upon conjecture in others.

It is impossible to pronounce at once; and in *all* cases, whether the cataract be hard or soft, or whether the lens only, or both the lens and its capsule, are the subject of morbid alteration of structure, you must be guided in *some* cases by general rules. In others however, the consistence of the opaque structures will be known by peculiar characteristic marks of distinction. You must form your diagnosis from the age of the patient, and the size of the lens. Lenticular cataracts are divided into hard, soft, or mixed kinds. A hard cataract, usually begins to form in the centre of the lens; is never met with in infants or children, but is the form of disease to which elderly persons are liable.

In large cataract, the lens is seldom of equal consistence throughout, the centre being more dense than the circumference. In examining a cataract, it will be necessary to apply belladonna to the eye-brow, in order to ascertain whether the iris performs its healthy functions, and consequently, whether the pupil is fixed or moveable; and in order also to obtain a view through the dilated pupil of the whole extent of the disease of the lens. It is by dilating the pupil only that you will be able to determine the precise condition of the whole part.



A hard cataract in adults will not be attended by an increase in the size of the lens ; you therefore, see a space between the margin of the pupil and the opaque body, and the iris will invariably retain its natural flatness. When the lens is hard and opaque the usual appearance of the centre is of a yellowish hue, sometimes amber-coloured, and the circumference of a greyish tint and lighter coloured ; some hard cataracts have been met with of a dark brown or chesnut colour. It often happens that the lens will assume a radiated appearance, the radii then usually commence from the centre. Radiated cataracts are always slow in their progress, and seldom produce the same degree of blindness as the amber-coloured lens.

When the capsule becomes opaque it frequently assumes a radiated appearance, and may therefore be mistaken for the morbid change of structure which I am describing. A radiated opacity of the capsule may always be distinguished by its situation. You see it directly behind the pupil, and lying on the anterior surface of the opaque lens. Whereas when the lens assumes a radiated appearance the radii are deep-seated, and extend through the whole of the opaque body. When the capsule is rendered completely opaque, you will be guided in your diagnosis by the size of the lens ; and you well know that if the iris retains its naturally flat appearance, in all probability the cataract is hard, since there is no evidence of an increase of size in the lens.

In soft cataract the lens is very generally enlarged, and in such cases will press forwards the iris so as make its anterior surface convex. Another change is also produced by this pressure upon the posterior surface of the membrane, viz., the appearance of a distinct black margin around the pupillary aperture. This is rendered strikingly apparent by the contrast afforded by the white appearance of the cataract behind. This black edge to the pupil is occasioned by a portion of the uvea which is pressed over the edge of the aperture, (vide Plate 14, fig. 2.)

Soft cataracts are often found to exist in children at the time of birth; and in this congenital form of the disease you will sometimes observe that the change of structure is partial, a small central defined portion only, being opaque; this defined white central spot in cataract, when from idiopathic disease, is found only as a congenital form of complaint, (vide Plate 14, fig. 3.) When the central part of a lens becomes opaque in after life, a greater or less degree of diffused opacity will surround the spot.

Soft cataracts in children are almost universally combined with opacity of the capsule; and it sometimes happens that in congenital cataract the lens, instead of being increased, will be diminished in size, and shrunk up. But in soft cataract which forms after birth, the lens will very generally be enlarged and pushed forwards against the iris; in adults, a soft cataract may form without an opacity of the capsule.

In young persons we never have a hard Cataract, and this should be strongly borne in mind ; because the appearance of an amber coloured opacity in the pupillary aperture of children must never, as in the case of adults, be considered as an indication of Cataract only.

Whenever a yellowish brown opacity is observed in the humors of the eye of a very young child, it is a sure sign that the organ will be destroyed by deep-seated disease. The Cataract is sometimes of a mixed character, the centre hard, and the circumference soft and almost fluid ; there is no diagnostic mark of distinction between this and hard Cataract. These then are the general appearances presented by different forms of lenticular Cataract.

Sometimes, however, the capsule becomes opaque before the lens exhibit any change of structure ; these opacities are called Capsular Cataracts : Capsular Cataract begins to form on the circumference of the lens, and will be at once known, not only by its situation, but also by the silvery, white, and radiated appearance which it presents. This appearance somewhat resembles that which might be produced by delicate radiated layers of asbestos or tale, laid upon the lens. The opacity in the course of time, extends from the circumference towards the centre, and thus the whole capsule becomes involved in the disease, (vide Plate 14, fig. 1.)

When the anterior surface of the capsule is the seat of disease, it is called Anterior Capsular Cata-

ract ; when posterior and behind the lens, Posterior Capsular Cataract ; and when both are combined, Complete Capsular Cataract. The anterior is easily detected, and when the posterior surface of the capsule is affected, without any corresponding opacity of the other transparent parts of the eye, the disease will be readily distinguished, first, by its silvery colour, secondly, by its concave surface, and thirdly, by its distance from the pupil.

With regard to complete Capsular Cataract, viz., when both anterior and posterior layers are rendered opaque : this is a disease which can never be detected, whilst the component parts of the organ remain in their natural relative situation ; for, in all these cases, the lens also will be opaque, and consequently the opacity of its posterior investing membrane cannot be seen, until both lens and anterior capsule are removed.

In all Capsular Cataracts the lens will become opaque to a greater or less extent in the course of time. This corresponding opacity may be either confined to the superficial layers, or it may extend throughout its whole substance. In the one case the lenticular disease may be hardly perceptible. In the other it will be distinctly visible.

Now, a complete opacity of the lens is always apparent ; but an altered condition of the capsule, will sometimes escape notice when the Cataract is soft ; and, consequently, when the milky whiteness of the part, will afford no contrast to the silvery hue

of the capsule, both appear to form one continued opaque body. When both capsule and lens are affected, the disease is called Capsulo Lenticular, and is a very frequent form of complaint.

Sometimes Cataract is combined with glaucoma, and no visible diagnostic symptoms of this disease are to be discovered ; at other times, you will be led to suspect a change in the condition of the vitreous humour, by accompanying symptoms : for instance, the iris will be altered in its colour, and the pupil fixed and dilated, or the sight completely lost. The best marks of distinction between Cataract in an healthy eye, and Cataract in an amaurotic eye will be in the motions of the pupil, and in the suffering of uneasiness, or pain in the part, and in the degree of imperfection of vision which will accompany the disease.

A motionless pupil is sometimes produced by previous adhesions, but in these cases the pupil is not dilated, and generally irregular in figure, and the distinction between light and darkness will not be destroyed unless the retina is in a morbid condition.

Having given you this general description of the appearances presented by different forms of Cataract, I shall now endeavour to make you acquainted with its treatment.



## TREATMENT.

The treatment of Cataract consists in the removal of the lens and capsule by surgical operation. No local application, no constitutional remedies will afford the slightest relief. The removal of the disease will consist in the mechanical removal of the opaque body from the axis of vision. Before, however, I describe to you the different operations which are required for this purpose, I shall mention to you a few rules, by which you will be guided in determining upon the propriety and probable result of the operation; the success of which will depend, in a great measure, upon their observance. The following general rules may be useful to you:—

If the lens or its capsule is alone the subject of disease, and if your patient be healthy in constitution, and temperate in his habits of living; or, if the disease should occur as a congenital affection in infants, it will almost in all cases be your own fault, if the operation should terminate unfavorably.

Therefore, when the imperfection in vision can be accounted for by the apparent opacity behind the pupil, a circumstance showing the sound condition of the retina; and when the pupillary aperture dilates and contracts freely, the formation of the Cataract having been attended by no pain or uneasiness

in the globe, orbit, or forehead, and particularly when the disease occurs in infants or young persons ; in these cases your prognosis will be favourable.

When the complaint is met with in the middle periods of life, in a plethoric robust subject, and arises from the remote effect of general inflammation of the deep-seated tunics ; and particularly if the Cataract has formed in one eye only, and the other is glaucomatous ; and if adhesions should have formed between the margin of the pupil and capsule of the lens, the result will be extremely doubtful.

In the middle periods of life, and in robust constitutions, you have to fear excessive inflammatory action. If opacity is produced by general inflammation of the tunics, you cannot precisely tell how far other textures may have been previously affected from the same cause ; if the opposite eye be glaucomatous and amaurotic, it will almost invariably happen, that glaucoma will exist in the one upon which you have to operate, and if adhesions have formed between the capsule and pupil, force is necessary to break down those adhesions in extraction, which may give rise to serious inflammation of the iris.

Again, if combined with hydrophthalmia or dropsy of the eye, or a contracted closed pupil from gout or rheumatism ; or if accompanied by a general varicose condition of the blood-vessels, or by the occasional appearance of flashes of light and muscæ volitantes ; or, above all, if the patient be not able to

distinguish light from darkness, the result of the operation will, in all probability be unfavorable.

There are many cases in which some of these objections may be urged against the performance of an operation, and when a palliative treatment will be required. Thus, for instance, an old person of feeble constitutional powers may be the subject of a Cataract, which will remain stationary, and which will produce imperfection without destruction of the sense of vision ; so that his ordinary means of enjoyment or occupation may be tolerably well continued.

Now, in such cases, the application of Belladonna to the eye, will allow a greater number of the rays of light to pass through a dilated pupil, and great temporary benefit may be obtained from its use ; and as we know how feeble the restorative powers are in old age, it will be better (if the disease should not materially interfere with the comforts of the patient), to adopt this palliative treatment rather than risk the total destruction of the organ, by the consequences of an operation.

In old persons, if one eye alone should be the subject of the disease, you will not be justified in operating ; for in all probability the other will in course of time become affected, and it will be time enough then to operate, and the removal of a Cataract from one eye will not prevent its formation in the other ; therefore, you are putting the patient to unnecessary risk.

If, however, after a Cataract has formed in one eye, you perceive incipient disease in the other, you will of course perform the operation before sight is completely obscured by the double disease. But whether in old or in young persons, there can be no possible necessity for an operation upon a diseased lens until the Cataract is perfectly formed.

Young persons, whose personal appearance is an object to them, may perhaps require the removal of the defect, and the operation for incipient Cataract, will not be attended by more unfavourable results than that for one perfectly formed; but there will be no *necessity* for the performance of the operation.

If, however, both eyes should be affected, and the disease should occur in a favourable subject for the operation, the sooner it is performed the better. But in feeble and aged individuals, it is not justifiable to perform an operation for incipient Cataract; for the disease is often extremely slow in its progress, and the remainder of life is not in any way deprived of its comforts by the trifling imperfection of vision, which the partial opacity will occasion. The mode of performing this operation, as well as some others, will be described in another place.

## MALIGNANT DISEASES OF THE EYE.

Malignant diseases of the globe of the eye assuming, as they always do, a truly fungoid character, differ in no one respect, either as regards their constitutional or local effects from fungoid and melanotic diseases occurring in other parts of the body, where we find structures analagous to those which compose the organ of vision. The disease is in the first instance apparently local, but in the course of time, we observe a constitutional tendency to the continued development of that peculiar morbid change in the healthy condition of various parts of the human frame, which eventually terminates in the destruction of life.

Now, in tracing pathologically the course of malignant interstitial growth in the eye, (as well, indeed, as in every other part of the body,) we are furnished with a most beautiful illustration, and a perfectly convincing proof, (if any were now necessary), of the truth of a comparatively recent discovery, relating to the pathology of all forms of malignant disease and their modifications, and of their distinguishing characters as contrasted with the formation of other tumours, apparently identified with cancerous or fungoid morbid productions ; for which discovery I think I need hardly add, we are indebted to the persevering



and scientific investigations of our distinguished and talented countryman, Dr. Hodgkin.

Formerly, we were taught to believe, that chronic glandular tumours, as well as the morbid enlargements of a very great majority, if not of all the tissues composing the human body might, and frequently did, terminate in the *conversion* of a diseased mass, by an almost imperceptible transition, and amalgamation into a malignant condition of structure, previously subjected to the common effects of widely different diseases; and that, to use a familiar term, “chronic tumors *passed* into a cancerous state;” by which of course is understood, that two diseases thus run one into the other, and that, consequently, the action of those self-same capillary vessels which previously occasioned the formation of any chronic interstitial enlargement, must under such circumstances be so entirely changed, as to occasion the effusion of cancerous deposit, capable of blending and mixing itself up with the product of common inflammation; or, at all events, with the product of a morbid action, essentially and totally different as regards its character, from that which we meet with as an invariable attendant on malignant disease.

Whatever may be the case now, with the better informed members of our profession, I believe that the confused and incorrect notions of the pathology of cancer, which I have noticed, still obtains with many of our professional brethren; knowing, therefore, as I do, that the diseases of the eye are

inseparably identified with general pathology, I consider that I am not travelling out of my road, in dwelling rather fully on a subject of so much importance.

I must refer you, however, to Dr. Hodgkin's publications on this subject,\* which I think will convince you that malignant tumours are formed by the adventitious growth of cysts closely analogous to serous membranes, that when occurring in combination with chronic tumours the malignant cysts are circumscribed and distinct, and that usually in proportion to their increase will be the absorption of the previous chronic deposit, and not the *conversion* of that deposit into cancerous or fungoid matter: the appearance of these cysts filled with melanotic deposit is shewn in Plate 10, fig. 2, 3, and 4.

Melanosis and fungus hæmatodes of the globe are not very uncommon diseases, they are essentially the same in their general characters, but will still be found to present very different appearances when occurring in the organ of vision as well as in other organs of the body. It therefore may be as well to describe them separately.

Melanosis of the eye rarely occurs in children, usually in middle age, or in old persons; it is rapid in its progress, varying in its course to the destruction of life from twelve months to two years; the symptoms will be pain in the eye and head, followed

\* See "Lectures on the Pathological Anatomy of the Serous Membranes, by Thomas Hodgkin, M.D."

by amaurosis. In a short time the organ begins to swell, the swelling being generally first seen about the junction of the cornea with the sclerotic, and the surface of the globe becomes subsequently discoloured at an early period, and a blueish or leaden tint is observed in the part; the lens next becomes discoloured. The enlargement of globe continues to increase; the eyeball is projected from between the lids, presenting the appearance of a dark livid globular tumour; after a time the lids themselves become discoloured and swollen, and will be of a dark, dirty purple colour, (Plate 10, fig. 1.)

As the disease becomes developed, constitutional irritation is produced to a greater or less extent, and, generally, in the course of a few months the sloughing process will supervene; the slough will form on the surface of the discoloured and swollen disorganised globe, and by the loss of substance thus occasioned, the increase of the tumour is limited. The size of the globe, therefore, in true melanosis, is rarely very enormous; vide plate 5, fig. 3, and contrast the appearance with fig. 1, which represents abscess of the globe and slough of the cornea. Melanotic tumours of the eye are, however, sometimes larger than that represented in fig. 3, but they never acquire the enormous size of fungus hæmatodes. Fig. 2 shows staphyloma of the sclerotic from choroiditis, occasioning discoloration of the sclerotic, which may be distinguished from the discolouration accompanying malignant diseases, by the apparent absence of disease in the pupillary aperture.

After a time the disease extends along the optic nerve to the brain ; other organs then become affected, and thus the whole system suffers from the extension of the malignant affection from a circumscribed spot ; the veins of the conjunctiva are always enlarged, so that the surface of the globe appears covered by a varicose network of vessels. In the latter stages, a fungous dark-coloured exerescence will sprout out, and profuse and repeated hæmorrhages will ensue ; the whole organ is in time converted into a dark mottled mass of fungoid matter of a medullary consistence.

On making a section of the tumour, the greater portion of the constituent parts of this mass will be of almost a black or dark-brown colour, readily yielding to pressure, and the fluid contents are sometimes nearly as dark as common writing ink ; the mottled appearance arises from the exposed cysts contrasting with the intervening contained patches of fungoid matter.

This disease, so far as I know, always begins to form in the interior of the globe, and generally at the posterior part, but always within the globe and not exterior to it. The treatment of this complaint may be either ætieve or palliative ; if the sloughing process has been set up, the palliative treatment will be required, for no ultimately successful operation can be performed ; opium may be used locally and generally, and the debility which accompanies the disorder, must of course be treated by appropriate means, generous diet



without stimulants, and the use of ammonia, as a medicinal agent, will be found useful; local depletion may be required when the pain is excessive.

When the disease is in an incipient form, and you find that the globe is enlarged only around the ciliary circle, a permanent relief may be afforded by a removal of the organ; for cases of incipient melanosis have been met with, in which the disease has never returned after the removal of the eye; but in the advanced stages of the disease where the fungoid growth is fully developed, and where the constitution has suffered, an operation is altogether useless, as regards any permanent benefit to be afforded. The operation will be precisely similar to that, which will be required in cases of fungus hæmatodes. I shall now, therefore, describe that disease, and afterwards the operation required for the removal of the eye.

#### FUNGUS HÆMATODES.

This is more frequently met with than any other malignant disease of the eye, it is precisely similar in all its essential characters to fungus hæmatodes, as it occurs in other parts of the body, commencing in one spot, and without, necessarily, producing constitutional disturbance in the first instance, acquiring an enormous size from the rapid growth of the fungous excrescence, which, from the pressure it



makes upon surrounding parts, will excite ulceration and absorption, and consequently the removal of the neighbouring textures; it usually occurs in the earlier periods of life; sometimes it has been met with even at the age of six months.

The disease is generally in its commencement unattended with pain; and the first sign of its existence will be detected in the pupillary aperture, which has a bright metallic appearance, deep-seated, with a pupil dilated and fixed; sometimes a deep-seated tuberculated tumour is observed, over which a number of blood vessels will be distinctly seen ramifying, (vide Pl. 11, fig. 1.) This may be considered as the first symptom of the disease; and whenever these appearances are present in young persons, the eye will be completely amaurotic.

As little or no inconvenience is produced by this disease in its *first* stage, the friends of the patient are in some cases the first to detect its existence; and amaurosis in one eye is often existing without the knowledge of the patient, who is unconscious of any feeling of disease in the part. After a few weeks, however, a sensation of pain and uneasiness is felt, and a general increase of vascularity will be observed; the lens becomes opaque, and the fungus begins to fill the interior of the globe. The lens is for the most part amber-coloured: this appearance, as I have said on a former occasion, is highly symptomatic of a malignant disease in children.

In this stage, the opaque lens will completely hide the fungoid growth which is behind it, and, therefore, in young persons we are only made acquainted with the real nature of the complaint, by a knowledge of the fact, that an amber-coloured lens seldom, if ever, occurs in the early periods of life, except as a concomitant of malignant disease of the interior. When the amber-coloured lens is produced in adults as an accompanying symptom of fungus, and when, in consequence of this, we are unable to see the fungoid growth behind it, we must be guided by other symptoms, by the sensation of pain, by the condition of the pupillary aperture, and the presence of perfect blindness.

“But in the last stages, the nature of the complaint can never be mistaken; the globe will be enormously swollen from the growth of the fungus within, the part becomes discoloured by inflammation, and pain is extreme; at last, the iris and cornea give way, and the fungus projects externally; an ichorous discharge is poured out; repeated hæmorrhages ensue, and the patient dies, worn out by extreme irritation and exhaustion (vide Pl. 8 and 9).

There is only one disease with which fungus, in an advanced stage, can be confounded, and that is abscess of the globe, but in abscess, extreme pain is felt from the commencement, and excessive vascularity with chemosis accompanies other symptoms; abscess forms generally in a few days, and the surface of the globe is round and smooth. The cornea is

white at first, but afterwards of a dark-greenish colour from slough (vide Pl. 5, fig. 1.) In fungus the vascularity, pain, and chemosis, are met with, after the globe has been considerably distended, and the surface of the eyeball is uneven, forming numerous globular or tubercular projections, from the unequal pressure of the fungus within. This disease occurs more frequently in children than in adults, and is almost invariably fatal to life. Very frequently, the morbid growth will extend along the optic nerve to the brain; at other times, the disease is confined to the globe, and will acquire an enormous size. The periods at which it destroys life are various, sometimes in a few months; now and then, a year or two may elapse before death is occasioned. In adults the complaint is often more protracted.

Children are, in some rare cases, the subject of morbid growth within the globe, which presents nearly the same appearances, in the commencement, with fungus hæmatodes; and, therefore, until true fungoid enlargement of the eye has been developed, you will not be justified in proposing in *children*, the horrible and painful operation of removing the organ.

The disease, which may be mistaken for ineipient fungus, is, it would appear, confined to the vitreous humour, and never, I believe, terminates fatally. The humour is converted into a morbid mass of a grey colour; in consistence, it has been compared to

boiled rice. The globe is not enlarged, but the same metallic reflection, which is seen through the pupil in cases of fungus, will also be observed in this disease; the first appearance, therefore, is nearly the same, but the progress is widely different: for instead of enlarging, the globe will, after a time, become diminished in size, and eventually shrink up within the orbit. The eye being permanently disorganised, no pain is complained of. This disease is, I believe, confined to children; I have not seen it in the adult. Now, as the extirpation of a fungoid eye, even in the earliest stages, is hardly ever attended by permanent relief in the case of children, (for the disease will always reappear;) and as it is quite impossible to distinguish the malignant fungus, in its earliest stages, from the morbid change of the vitreous humour, which I have just described, you must be aware of the cruelty of performing an operation of the most painful kind until you are perfectly convinced by a general enlargement of the globe, that the disease will admit of no other remedy. The removal of the eye in children, however, can hardly be considered, even of temporary benefit, since the return of the complaint will occasion death, in nearly as short a time as when the fungus is left to nature.

This is not the case in adults. In some instances, the disease has been many years in returning, and in others, it has never reappeared. Never remove a fungoid



eye in an infant or child, without making the parents or friends fully aware, that temporary relief from pain, is the only result which you can promise, and never, for a moment, think of proposing the operation, until the fungoid nature of the disease is fully developed. The palliative treatment of fungus is precisely the same as that, which will be proper in cases of melanosis. Opium locally and constitutionally, with local depletion. When you are justified in making an attempt at permanent relief, the operation will be performed in the following manner :—

Of course the patient is to be prepared by an alterative course of medicine, for ten days or a fortnight. The bowels cleared every other day, and stimulants are to be avoided.

#### OPERATION.

Place the patient in a recumbent posture, having the head fixed by an assistant; divide the lids at the outer canthus, then divide the optic nerve, by passing a crooked curved knife from the outer side down to the optic foramen, and afterwards dissect out, not only the globe, but the whole contents of the orbit. Bleeding from the ophthalmic artery can be controlled in most cases by the pressure of a pledget of lint. Sutures are rarely required, unless the tumour has been of great size; a light bread-and-water poultice should be applied to the



part; the granulations thrown out from the cavity of the orbit, during the healing process, unite well with those of the the posterior surface of the lids, which fall in, and a depression is left in the former situation of the globe. The patient is to be kept upon low diet, to prevent the accession of excessive inflammatory action in the part, which might otherwise, extend to the dura matter.

#### OPERATION FOR CATARACT.

It is not my intention, to give a minutely detailed account of the different operations required for the cure of Cataract; a general description of the steps of those operations is all that can be necessary or useful, in lecturing or in writing upon the subject; the operation must be seen upon the living subject, before the exact mode of procedure can be clearly understood, so as to enable a young operator to make his first essay, with confidence in himself and comparative safety to his patient.

The practical instruction obtained by attendance upon an Ophthalmic Institution, is absolutely necessary for the guidance of a beginner: without this, he can have no idea of the difficulties which, as an operating ophthalmic surgeon, he will have to encounter; nor can he, otherwise, make himself acquainted with the best means of avoiding and surmounting them. By the aid of diagrams and descriptions, I shall be

able to show you what the operations are, and to give you general instructions, as to the safest and best mode, of performing them. I consider that it would be useless to attempt more than this, your own personal observation, in the wards of our Eye Infirmary, must supply the necessary illustration.

Now, before any attempt is made to remove, by operation, an opaque lens from the axis of vision, (which, of course, it is your object to do, when you operate for Cataract), it is essentially necessary, that your patient should undergo a preliminary course of treatment, which will be directed to the prevention of excessive or undue inflammatory action, in the part to be operated upon, and in surrounding textures, after the operation has been completed ; the necessity for after-depletion must, in all these cases, be prevented, as much as possible, by prophylactic precautionary measures ; perhaps it is more necessary to attend to this point, in cases of operations upon the Eye, than in those of any other part of the body. For instance : after an amputation, the removal of a tumour from the body, or a stone from the bladder, the patient may be satisfied with the conviction, that the object of the operation has been accomplished, however long the divided surfaces may be in healing, from want of union by adhesion, occasioned by neglecting the precaution I am alluding to, for the parts have been taken away which it was your intention to remove ; but if you extract a Cataract from a patient, the subject of general cachexia, neglecting

previously, the state of his general health, and find from such negligence, that unhealthy action is set up in the parts you have divided; and that immediate union is prevented, although in the first object of your operation, you may have been successful by having removed the lens, yet a failure in the ultimate object, viz., the restoration of sight, is almost inevitable; for the anterior part of the globe being left open by the unclosed aperture in the cornea, the iris will prolapse, and part of the contents of the globe will escape; and the hopes of restored vision, which you had held out to your patient, are disappointed, and discontent on the part of that patient, or loss of reputation on your own, will too frequently, under such circumstances, be the result.

In other operations on the Eye, a failure may often be the consequence of neglecting the state of the constitution, beforehand. Be extremely careful, then, never to offer too sanguine promises of the successful result of an operation for Cataract, even in the most favorable cases, but always endeavour to insure success by proper preliminary measures, as well as by every other means in your power.

In giving you instructions for preparatory treatment, you must of course be aware, that I can lay down no formal fixed rules for practice, which will be applicable in all cases; you must be guided by general principles, and apply them to the general treatment of your patient, remembering that you have this object in view—to reduce vascular action

below the natural standard of health, and to ensure a healthy performance of the functions of the different organs of the body, more particularly of the digestive organs, by appropriate means. Having done this, and with the conviction, that with the exception of opacity of the crystalline lens, the organ of vision is in a healthy condition, you may safely operate, without any well grounded fear of subsequent serious consequences, provided the operation is properly performed. There are three modes of operating for the removal of an opaque lens from the axis of vision, viz., extraction, depression, and solution.

In performing the operation for extraction, you will have to make a section through the cornea, of sufficient extent to admit the exit of the lens from the interior of the globe, through the wound; the lens of course, in escaping, passes through the pupillary aperture. The divided surfaces by adhering, prevent the escape of the humours of the Eye, and protrusion of the iris, and the organ is in time, restored to its former shape and condition, with the exception of a loss of the lens.

In the operation for depression, the lens is displaced, and pushed from the axis of vision downwards and backwards, into the vitreous humour, where it either remains afterwards, without producing irritation in surrounding parts, or becomes absorbed.

Solution of the lens, is accomplished, by bringing the part forward, in contact with the aqueous humour, in



consequence of which, it becomes first dissolved, and afterwards absorbed.

The three operations are performed in the following way. First of the

## OPERATION FOR EXTRACTION.

The patient is to be placed in a recumbent posture, the head firmly held by an assistant, who with his fore finger, raises the upper lid without making pressure upon the globe. You then, with your fore and middle fingers depress the lower lid, taking care also to avoid making pressure upon the globe, particularly at the outer part. You are now to endeavour to make a section through one half of the circumference of the transparent Cornea, at a line's distance from its junction with the sclerotic. The mode of accomplishing your object is represented in Pl. 15, Fig. 1, 2, 3, and 4. The point of the Cataract knife,—and to a good operator it is immaterial whether he uses that recommended and used by Beer of Vienna (Plate 16, Fig. 15), or the one which Baron Wenzel always made use of (Plate 16, Fig. 16) — the point of your instrument is to be passed through the cornea, into the anterior chamber, at one line distance from the outer margin of the tunic (Plate 15, Fig. 1). Now, you may make your section, either through the upper or lower half of the cornea, (Plate 15, Fig. 4), or obliquely, from above downwards (Plate 15, Fig. 2.)



I always prefer the latter, as I find that in making this section I am less inconvenienced by what is always a cause of embarrassment in the operation for cataract, I mean, the rolling of the globe inwards; in making this section, you carry the blade of your knife in a parallel plane with the iris, bringing the point of the instrument out again through the transparent tunic, at a point corresponding with that, at which it entered, by continuing to push your knife onwards in the direction I have described, your section will be completed, (Plate 15, fig. 2 and 3.) If it should so happen, that the aqueous humour escapes before your knife has fairly passed through, and that consequently, the iris is folded over its edge, so as to render a wound through that part inevitable, in the event of your proceeding further, it is better to withdraw your knife at once, and complete the section by means of a small probe-pointed bistoury, (Plate 16, fig. 17,) constructed for the purpose, (Plate 12, fig. 3.) Frequently when the section is made the lens instantly escapes; but should this be prevented by the continuity of the capsule, that part is to be lacerated, by scratching across its anterior surface with the sharp pointed curved end of the curette, (Plate 16, fig. 10;) this is readily done by introducing it under the flap of the cornea, and turning its point backwards, taking care in doing so, not to get it entangled in the iris; gentle pressure made upon the globe, by means of the spoon-shaped end of the curette, will now complete the operation,

by dislodging the opaque lens, and forcing it through the pupil and the opening in the cornea; the escape of a small quantity of vitreous humour, will be of no consequence.

If the cataract occurs in the right eye, and the operator is not ambidexter, his best plan will be to make an upper transverse section, the fore and middle finger of the left hand, which fixes the patient's head against his chest, being employed in raising the upper lid, whilst the lower, is depressed by an assistant. When an *upper* section is thus made, there is very much less liability to subsequent prolapsus of the iris than when a transverse opening is made through the *lower* part of the cornea, and for many other reasons it may be considered by far the safer operation of the two. After the operation, the patient is to be kept in a cool, well-aired apartment, light must be excluded from the eye, and every caution taken to prevent subsequent inflammation; if iritis comes on it will usually be about the fourth day; corneitis, and general inflammation of the external tunics, in the first forty-eight hours.

In the treatment of these diseases, you cannot require any instruction respecting the management of your patient, should these untoward consequences of the operation occur, as they have been already described to you.

## OPERATION FOR DEPRESSION.

In some cases where the operation for extraction, is rendered not only extremely difficult in its performance, but dangerous in its consequences, from the small size of the anterior chamber, adhesions of the pupil to the lens, and from various other causes. The operation for depression may be safely performed, and in the following way: the patient is to be held as in cases where the operation for extraction is to be performed, with this exception, that moderate pressure may now be made upon the globe to steady the part, the pupillary aperture being dilated by the application of belladonna. A cataract needle (Plate 16, fig. 14,) is then to be passed through the sclerotic, immediately below its transverse diameter, at the distance of one line from its junction with the cornea, its point is then to be carried between the posterior surface, of the iris and the crystalline capsule, until it has passed rather beyond the centre of the pupillary aperture, (Plate 15, fig. 8.) It is then to be directed against the fore part of the lens, which is to be pushed downwards, and backwards, into the vitreous humour, in the way represented in Plate 15, fig. 7; care must be taken in this operation, not to leave the lens depressed, against the ciliary processes, or retina, in which case iritis will be the almost inevitable consequence; and the occurrence of

acute iritis as a sequel to the operation for depression, from the continuance of the exciting cause I have mentioned, may be considered synonymous with a complete destruction of the functions of the organ.

Iritis from this cause, generally comes on in a few hours after the operation; the treatment, under such circumstances, is clearly indicated, consisting in the introduction of the needle a second time, and raising the depressed lens, using afterwards, the usual remedies for iritis, should that complaint continue, after the exciting cause has been removed, which is not always the case. If the continued pressure of a depressed lens against the retina, or ciliary processes, producing iritis, is not taken off, rest assured that the sight will be lost. The after treatment of cases of cataract, in which this operation has been performed is the same as where the lens has been extracted.

#### OPERATION FOR SOLUTION.

This operation for cataract is easily performed, and so far as my experience goes, more satisfactory in its results, than either of those which I have described to you; of course it is applicable to cases of soft, rather than of hard cataract.

Now, when you wish to bring the lens into contact with the aqueous humour for solution, you can effect your object, either by an anterior, or posterior ope-



ration. Prior to either, you are to dilate the pupil as much as possible, by applying the extract of belladonna around the orbit, or diluted with water to the surface of the conjunctiva, the eye being then held as in cases of operation for extraction and depression, a needle is to be passed either through the cornea for the anterior, or through the sclerotic for the posterior operation, at about the distance of a line from the junction of the tunics. In either case, whether it is pushed before, or behind the iris, the point is to be directed to the central, anterior surface of the lens; it will then be your object to lacerate the capsule, and to bring the anterior layers of the lens, and, if the cataract be a very soft one, the whole of the opaque body, into the anterior chamber: be careful in making the attempt, not to displace the lens backwards; withdraw your needle carefully and slowly, that neither the cornea, nor iris, may be injured. Several operations may be required to insure the absorption of the lens, and its capsule, but inflammation threatening the safety of the organ hardly ever follows. This operation, may be performed in all cases of cataract with success; it is, however, more particularly applicable to those cases where the lens is softened down.



## OPERATIONS FOR ARTIFICIAL PUPIL.

The loss of vision, resulting from a closed state of the pupillary aperture, admits of remedy in many cases by operation ; this consisting in the formation of an artificial opening, made through the iris ; various alterations in the condition of the component parts of the organ may render the operation for artificial pupil necessary.

Sometimes a closed pupil is a congenital deformity, but more frequently the affection arises from previous inflammatory action, by which, unnatural adhesions, or organised adhesive deposit, have occasioned the complaint.

Now, previous to proposing any operation it will be proper to ascertain whether the loss of vision has been occasioned by the closure of the pupil only, or whether surrounding textures also have suffered materially from previous disease, and amaurosis thus been brought on.

It is almost always useless to operate, if there be any appearance of enlargement of the globe from Hydrophthalmia, or Staphyloma of the Sclerotic. Another objection is a dull leaden blue discoloration round the ciliary circle, with a varicose congested state of the conjunctival vessels, and most probably you will be unsuccessful in attaining your ultimate object, if an obliterated pupil is accompanied by a permanently dull discoloured iris ; for previous in-

flammation producing this change will, in such cases, have occasioned complete disturbance in the functions of the retina.

Should your patient be unable to distinguish light from darkness, rest assured that amaurosis will be present. If, however, the iris preserves its natural colour and brilliancy, and the form, and general condition appear to be natural, the following operations may be performed.

#### OPERATIONS.

An aperture may be made in the iris, for the purpose of admitting the passage of the rays of light to the retina, either by making an incision through the tunic, by excising a portion of it, or by forcibly tearing through its fibres.

The operation for incision is represented in Pl. 17, Fig. 6, in which it will be seen, that a needle with cutting sides has been passed through the sclerotic coat, at about a line distant from its junction with the cornea; that the point having punctured the iris, and entered the anterior chamber, has been carried onwards more than half across the transverse diameter of that part, and that by a succession of motions, the cutting edges of the instrument have made an incised wound through the iris, the divided fibres of which have separated, and left an inlet for the passage of light to the retina. Belladonna should be ap-

plied after this operation, to keep asunder the cut surfaces, which, however, frequently reunite notwithstanding; and a second or third operation may be required, which may still be very unsatisfactory in the result.

An extremely small knife has been used and recommended instead of a needle; the latter, however, is to be preferred. Another mode of performing the operation, consists in making with a cataract knife, an opening in the cornea, large enough to admit the introduction of the blades of a very fine pair of scissors (Plate 16, Fig. 9), by the closure of which, after one has been passed through the iris, an incision is made.

The operation for laceration is applicable to those cases more particularly, where a central opacity of the cornea, of large size, is the cause of blindness. An artificial pupil must, then, of course be made in the circumference of the iris, and this is effected by tearing away a portion of its ciliary attachment, as shown in Plate 17, Fig. 5.

A needle, bent at the point, commonly called Scarpa's needle (Plate 16, Fig. 13), is here represented as having penetrated the Cornea near its junction with the sclerotic, it has been passed into the anterior chamber, through which it has been carried to the opposite side, where the point is directed backwards through the iris, which coat has been carefully separated by laceration from its ciliary

connections, to form a new pupil made through its circumference.

The operation of excision is accomplished, by making with a cataract knife, a section or rather puncture through the cornea, sufficiently large to admit the introduction of a pair of fine double hooks, or the forceps, figured 1, in Plate 16, by either of which a portion of the iris can be drawn out through the aperture, and excised with a pair of scissors. Sometimes the iris will partially prolapse as soon as the opening has been made in the cornea, in which case, the introduction of the forceps or double hooks into the anterior chamber will be unnecessary, as the prolapsed portion can be readily seized, exterior to the surface of the transparent tunic.

After the operation for artificial pupil, the same precautionary measures will be requisite in the after treatment to insure success, as in cases where you have operated for Cataract.

An operation is sometimes required for the removal of deformity and disease in the eyelids, occasioned by an inverted or everted state of the parts, the former is called Entropion, the latter Ectropion.

## ENTROPEON

Is accompanied by an affection called Trichiasis, viz., an inversion of the Eyelashes against the globe, by which, as well as by the pressure of the inverted lid, excessive irritation and continued inflammation are produced on the surface of the eye. When the disease is of long standing, surgical operation becomes necessary for the relief of the patient; this in cases where the inversion is not very great, consists in the division of the tarsal cartilage, at the outer canthus, keeping the divided parts afterwards separate during the healing process; but, in the severest chronic forms of the complaint, to insure a permanent and radical cure, either the whole of the cartilage must be excised, or a flap made by a double vertical section through the part, which is to be kept everted long enough to prevent union by adhesion, by means of threads passed through the edges of the flap, and attached by means of strips of adhesive plaister to the adjacent integuments. A minute description and delineation of the mode of performing this very simple operation will be found in Mr. Guthrie's work on diseases of the eye. I believe that gentleman was the first to suggest and perform it; I have succeeded in some cases remarkably well with Mr. Guthrie's operation, but in others have failed, and been obliged to excise the whole cartilage afterwards,



which I now generally do, in the most aggravated forms of the disease, when of long continuance.

The removal of a portion of integument from the lid, and bringing afterwards the divided edges of the wound together, so as to draw the cartilage into its natural situation, by thus tightening the skin of the lid, has been recommended; but I have generally found the advantage which is derived from this plan of treatment only temporary, and for the most part the same may be said of the application of caustic to the integument covering the lid, made with a view of forming a cicatrix, and consequently of producing contraction of the surrounding soft parts.

#### ECTROPEON

Is met with either as a temporary affection, or as a permanent deformity. Temporary Ectropeon results from inflammation of the conjunctiva of the lid, and its cellular connections producing swelling of the membrane, and consequently eversion of the tarsal cartilage.

I have already described the diseases in which you will meet with it; purulent ophthalmia is the most common. By removing the inflammatory disease, the necessity for operation is prevented; but in permanent ectropeon you will generally have some difficulty in relieving your patient. The eversion is usually produced by cicatrices in surrounding parts, and at

first it would appear, that the removal of the cicatrised integument, which immediately afterwards allows the lid to be brought up in most cases, would easily effect a permanent cure ; but it is found that subsequent contraction takes place in almost every case, and something more, therefore, is required ; the removal, however, of the cicatrix and adhesions to deep-seated parts, must always be the first step in the operation for a perfect and permanent cure, which may be effected in two ways, first, by cutting out a central triangular portion of cartilage, the base of the triangle being at the edge of the lid, bringing the parts together afterwards by suture, and preventing the union of the wound, occasioned by the removal of the cicatrix by adhesion, so as to allow the adhesive process in the cut edges of the cartilage to go on undisturbed by a subsequent tendency to contraction in the parts closed over, and covering the situation of the former cicatrix. This operation will be applicable only where the eversion is slight ; but in the worst cases where eversion is excessive, in addition to the removal of the cicatrix, another means of remedy must be had recourse to, which may either be combined with the excision of a triangular portion of cartilage or not, according to the condition of the part ; it will, however, generally be necessary when the cartilage is permanently altered in its shape by long eversion. The operation necessary to accomplish a perfect cure consists in patching a portion of

continuous integument upon the gaping surface of cellular membrane, exposed by the removal of the cicatrix ; by this Taliacotian operation, I have not, to my recollection, failed in curing the deformity in any remediable case. The detached portion which you transpose is to be confined in its new situation by small metallic (platinum) sutures, and a light bread-and-water poultice used as a dressing. It rarely happens that more than one small strip of adhesive plaister under the poultice is required to assist in keeping the part in its place, if the sutures are properly applied ; and sometimes a poultice will be all the dressing necessary.

This operation being a severe one, very few patients will be inclined to submit to it, unless the deformity and inconveniences are very great ; but it is the only perfect radical cure I know of in the worst forms of ectropeon.

In these my lectures on *Diseases* of the Eye, it is not my intention to describe the effects of mechanical violence upon the organ of vision and its appendages, as these, when Ophthalmic and general surgery are recognized as one science, must be considered as a subject for the lectures on wounds, contusions, &c. generally, and to enter into a description of the nature of the tumours formed in the lids, and the mode of operating upon them would be needless, as similar tumours are met with in analogous structures in all parts of the body, and described

to you in the course of surgical lectures of which these form a part. I shall conclude, therefore, by offering you a few observations on

#### MORBID AFFECTIONS OF THE LACHRYMAL CONDUITS.

The lachrymal conduits consist, as you know, in the puncta lachrymalia, the sac, and the nasal duct. Now the principal inconvenience or suffering experienced from a deviation from the naturally healthy condition of these parts, will arise from the effects of inflammation, by which abscess in the lachrymal sac, and continuous structures or closure of the puncta or stricture of the nasal duct are produced.

The closure of the puncta, from whatever cause arising, is to be removed by passing a sharp-pointed instrument (a pin answers the purpose better than any other) perpendicularly downwards in the lower, and upwards in the upper lid, into the orifice of the punctum, *but no further*: a very fine punctum probe (Plate 16, fig. 4,) is then to be introduced, and having been carried in the first instance in the same direction, for the distance of about a line, will be easily pushed through the lachrymal duct leading to the sac by turning the instrument in a horizontal direction inwards, and thus a free passage for the tears into the sac is opened. Unless you observe some external indications of altered structure, exterior

to the lachrymal duct, by which obstruction may be occasioned, the cause of epiphora consequent to the stoppage of the tears in their course from the conjunctival surfaces to the sac, will always be found in the punctum ; for stricture in the lachrymal duct never occurs as an idiopathic affection.

By performing the operation I have just described a few times, and attending to the healthy state of the conjunctiva, your patient will experience entire relief ; from various causes, however, the complaint is liable to recur.

We next come to diseases of the lachrymal sac ; these occur in combination with a morbid condition of the whole or part of the lining membrane of the nasal duct, which is, I believe, the most frequent cause of the complaints to which the sac is subject ; the only diseases you are likely to meet with in practice will result from common inflammation ; and this I believe is very generally occasioned by the irritation of a morbid lachrymal secretion, which from its effects upon the continuous mucous membrane of the sac and duct, occasions, in the first instance, obstruction at the narrow part, where they unite (*viz.*, where the nasal part of the conduit commences in its bony canal) ; this obstruction being produced by the thickening of the membrane itself as well as of its surrounding investments ; a distension of the sac next follows, at first occasioned by an accumulation of lachrymal fluid, but afterwards by purulent effusion from the lining mem-



brane of the sac, discoloration shows itself in a short time on the integuments covering the suppurating membrane beneath, the abscess bursts, and the tears continuing to pass through the opening, a disease called *fistula lachrymalis* is produced. This complaint then involves both the sac and duct; the former subjected to suppurative inflammation, the latter to stricture. The treatment consists in establishing a free outlet for the contents of the sac, and in lessening inflammation in surrounding parts. Leeches are often necessary, and a light bread-and-water poultice will be found the most grateful application during the acute stage; as soon as pus has formed, an opening should be made with a lancet for its evacuation, and a probe passed through the sac and nasal duct into the nose; but if the contents of an inflamed and distended sac are found, upon pressing them through the puncta, to present no evidence of suppuration, the dilatation of the obstructed duct will probably render any other operation unnecessary. There are two modes of dilating a strictured nasal duct without making a wound in the face; the first recommended, and I believe, first practised by Mr. Travers, consists in passing a punctum probe through the lachrymal duct into the sac, carrying it, after it has fairly entered that part, almost directly downwards into the nose, and thus clearing a small channel for the passage of the fluid which collects above. Mr. Travers recommends injections in these cases, made through the puncta by means of the introduction of Anel's finely-pointed

syringe tubes (Plate 16, fig. 2, 3, and 7) ; my practice consists in passing a curved probe (Plate 16, fig. 12) *upwards* through the duct, an operation which, although it may require a little practice to perform it with facility, is, so far as my experience has gone, most satisfactory in its result. No force must be used in introducing the instrument, the point of which having been carefully fixed in the lower opening of the duct, after being carried under the inferior turbinated bone, is to be gently pushed upwards into the sac, through the stricture, by depressing the handle of the probe or sound, keeping the convex part next to the handle upwards ; then, after having established a free passage through the canal from below, I generally inject tepid water from day to day, by means of a small catheter, introduced in the same manner as the sound (Plate 16, fig. 11,) and attached to an Anel's syringe (fig. 6). By following this plan, suppuration may sometimes be prevented, but at all events a fistulous opening in the face is prevented, if the disease is confined to the membrane, (although an abscess may have formed in the sac,) in consequence of the prevention of any accumulation there, from frequent injections.

Epiphora, accompanied by inflammation of the sac, is not uncommon in strumous children ; but attention to the general health, and the means of lessening surrounding inflammation, if any should exist, together with mild astringent collyria, will generally cure the disease and remove the exciting

cause, which is a temporary obstruction in the nasal duct from accumulated morbid lachrymal secretion, accompanied by a slight thickening of the lining membrane of the duct itself.

In Plate 16, fig. 8, you will see a representation of what is called a style, viz., a metallic pin, which is recommended by some, as useful for the cure of lachrymal obstructions, when worn in the nasal duct, into which part it is introduced through an opening made in the sac; the button head, of course, prevents the pin slipping down into the nose as it rests on the face.

I never adopt this plan of treatment, for I consider my own and Mr. Travers's much better in principle and in practice.

I ought, perhaps, to mention before concluding, a relaxed state of the puncta, by which they are increased in size, and rendered patulous, and consequently prevented insuring the induction of the tears to the sac, and occasioning what is called watery eye or epiphora. The treatment of relaxed puncta consists simply in the application of astringent collyria.

Now gentlemen, whatever further information you require on the subject of Ophthalmic Surgery, and whatever illustrations you may seek for on the subjects treated of in my lectures, will be afforded you during the practical study of your profession in the Eye Infirmary attached to this Hospital.

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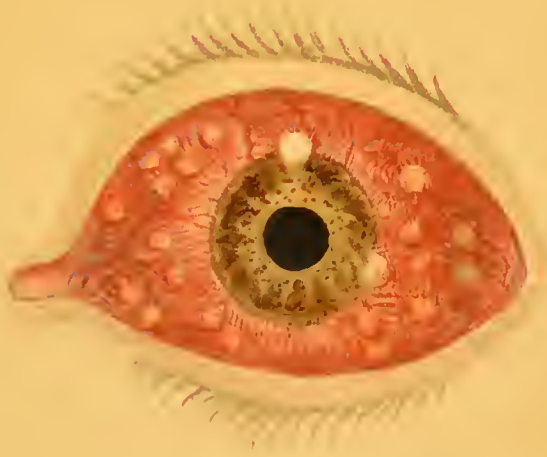
## PLATE I.

FIG. 1.—Acute Inflammation of the Conjunctiva, showing the scarlet-red appearance of the tortuous vessels of the membrane, which is always distinctly seen previous to, and sometimes after the accession of acute inflammatory Chemosis, shown in PLATE 13, FIG. 1, the morbid condition of the part here represented, accompanies, more or less, most of those diseases of the external tunics, still recognised by some under the general term of Ophthalmia, but which will be found noticed separately in these Lectures, in the description of the various diseases connected with Conjunctivitis,

FIG. 2.—Apthous or Pustular Inflammation of the Conjunctiva, with diffused inflammation of the whole of the membrane covering the sclerotic; the Aphthæ, it will be observed, are numerous, and of *comparatively small size*, as in almost all cases where a considerable number form on the part at the same time.

FIG. 3.—Chronic Aphthous Inflammation of the Conjunctiva. It will be obvious that the assistance of a magnifying glass must be necessary to show the appearances here represented, as well, indeed, as those delineated in Fig. 2, for they are both *rough diagrams*, which I have, however, thought more explanatory than highly finished drawings.

In this diagram only two Aphthæ appear to have formed, which are of *large size*; this is frequently the case when they are not very numerous, and when unaccompanied by diffused surrounding acute inflammation of the Conjunctiva.







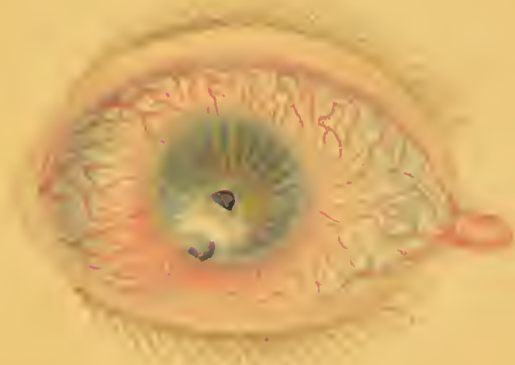
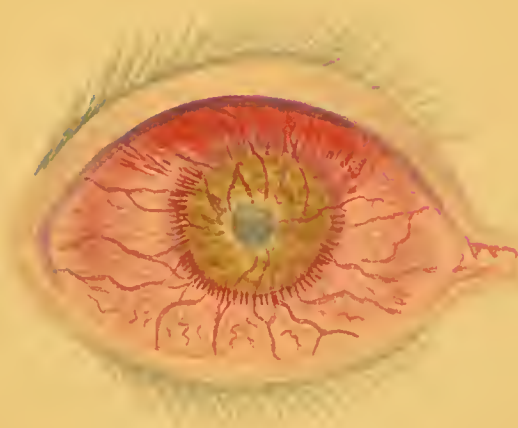
## PLATE II.

FIG. 1.—Inflammation of the Cornea as seen most frequently in those who have suffered from uncontrolled Strumous Ophthalmia. The reddened circle surrounding the opaque Cornea arises from an altered condition of the *conjunctival* vessels which are usually slightly raised, as they overshoot the margin of the formerly transparent tunic. Acute Conjunctivitis does not *always* accompany this form of disease.

FIG. 2.—This diagram shows the effects of mechanical pressure made upon the globe, either as a consequence of a granular state of the Conjunctiva of the lids or (as in rare cases) of an undue contraction of the fibres of the Orbicularis Palpebrarum, the result of some morbid action in a distant part. Chronic Conjunctivitis is here seen combined with a hazed condition of the Cornea, which is marked or streaked by numerous Conjunctival vessels carrying red blood, the greater number of these being situated on the upper part of the surface of the globe, where the eyelid makes the most pressure. The term Pannus has been given to this complaint, and Vascular Cornea is its common designation.

FIG. 3.—Prolapsus of the Iris, in which a portion of the tunic has been pushed through the lower part of the Cornea, the aperture in which is surrounded by a whitened haze of inflammation; the turgid state of the conjunctival vessels here represented, in most cases accompanies Prolapsus Iridis until the process of redress has been completed.









### PLATE III.

FIG. 1.—Represents the appearance of a granular state of the Conjunctiva of the upper lid with the first effects of its pressure upon the globe, the inflammation occasioned by that pressure being indicated by the reddened appearance of the subjacent Conjunctiva and the haze of the surface of the upper part of the Cornea.

FIG. 2.—A very rough diagram of the peculiar form of Inflammation shown in Fig. 1, that inflammation is, always vasicular on the surface of the Cornea, which, from the bursting of the vesicles, assumes a scabrous appearance; sometimes the Cornea nearly retains its transparency, but usually it becomes hazed around and beneath its injured surface, as it is here represented.







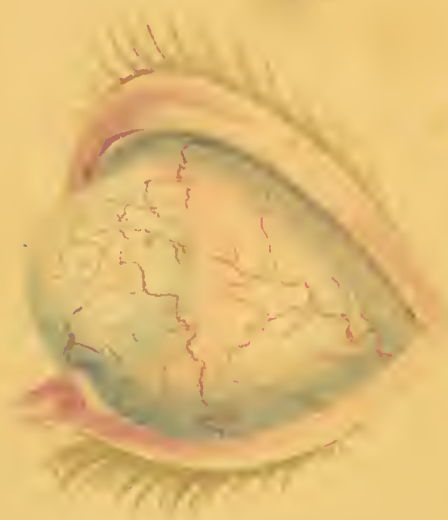


#### PLATE IV.

FIG. 1.—Hypopyum or Hypopion, or, as it has sometimes been called, Unguis, with inflamed Conjunctiva and Cornea. On the posterior of the Cornea will be seen circumscribed opaque spots indicating the situation of abscesses in the posterior layers, from the bursting of which the purulent effusion which has gravitated to the lower part of the anterior chamber, has produced the appearance called Hypopion or Unguis; the opaque spots in the transparent Cornea are generally, whether of recent formation, or remaining after active disease has subsided, known under the name of Onyx.

FIG. 2.—Staphyloma of the Cornea.

FIG. 3.—Abscess of the globe accompanied by Acute Inflammatory Chemosis of the Conjunctiva and disorganised Cornea.







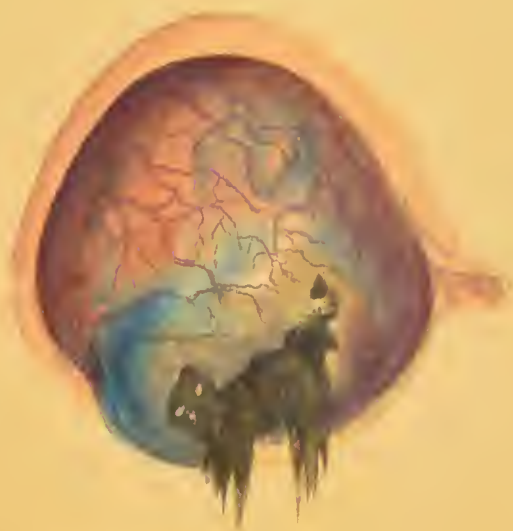


## PLATE V.

FIG. 1.—Abscess of the globe, with a dark-coloured slough of the Cornea, accompanied, as this disease always is, by inflammatory Chemosis of the Conjunctiva.

FIG. 2.—Diffused Staphyloma of the Sclerotic, symptomatic of choroiditis, as well as of some other morbid affections of the external tunics.

FIG. 3.—Fungus Hæmatodes, as contrasted with Fig. 1. It will be here seen that a slough has here also taken place in the fore part of the globe, but the distinction in the appearance of surrounding parts will be obvious on comparing the two diagrams.









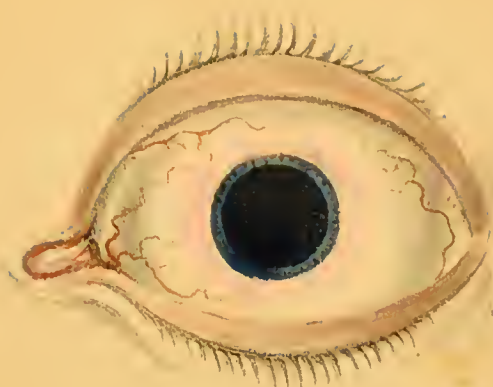
## PLATE VI.

FIG. 1.—Incipient Retinitis, with widely dilated Pupil and the appearance of the first blush of inflammation in the sclerotic coat at that part, where it encircles the transparent Cornea.

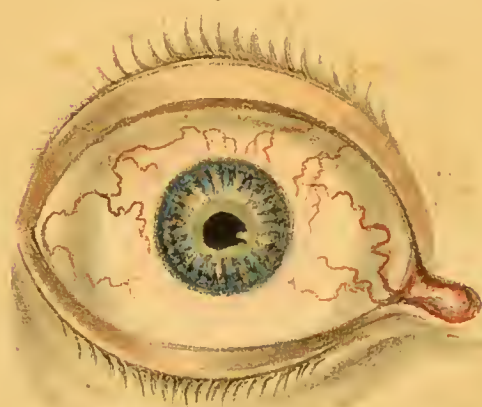
FIG. 2.—Incipient Iritis, previous to the accession of Conjunctivitis; it will be seen that a pink zone encircles the circumference of the Cornea, the pupil irregular in shape from recent adhesions to the capsule of the Crystalline Lens. The first appearance of discoloration in the Iris is shown at the central part around the Pupillary aperture.

FIG. 3.—Iritis in a more advanced stage; the whole of the Iris discoloured, its bright radiated appearance entirely obscured, the pink zone in the sclerotic coat increased, a patch of lymph is poured out upon the lower and anterior part of the Iris, together with a small portion of pus, the precursor of Hypopion.

1



2



3







## PLATE VII.

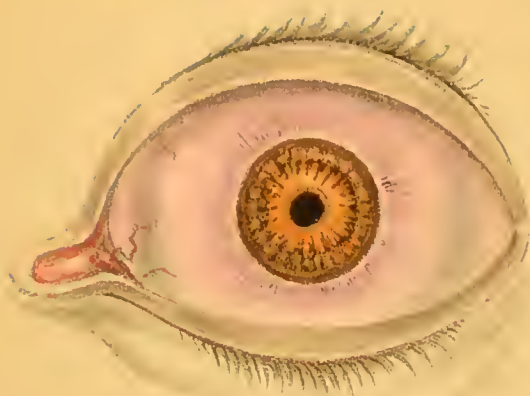
FIG. 1.—Acute diffused Inflammation of the Sclerotic, with a contracted Pupil, the Cornea remaining unaffected.

FIG. 2.—Haze of the Cornea, with slight Inflammation of the Iris, accompanied by a pink sclerotic zone.

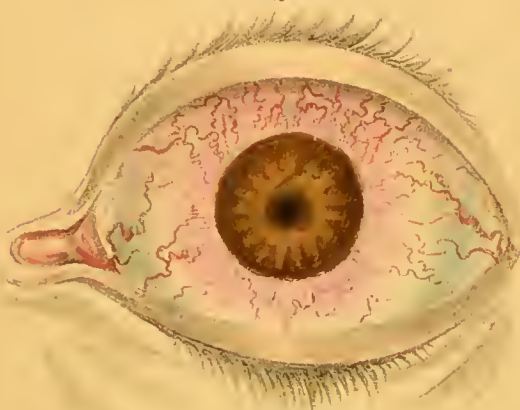
• FIG. 3.—Chronic Sclerotidis. It will be seen that the zone is here of a somewhat purple colour, and that the vessels in the Sclerotic, radiating from the point of its junction with the Cornea, are imperceptible from their extreme minuteness, the discoloration appears like a stain on the part, the Iris has recovered its brilliancy, and it can be hardly said that any tunic but the Sclerotic is visibly affected ; this is Congestive Inflammation, and requires an alterative and tonic plan of treatment. This complaint is often mistaken for Iritis.



1



2



3

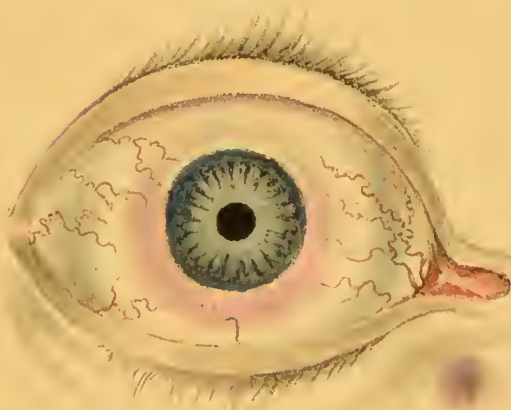






PLATE VIII.

Fungus Hæmatodes of the Globe. The drawing was taken from a patient in whom the disease had existed twelve years.









PLATE IX,

FIG. 1.—The termination of the disease represented in Plate 8. The patient died sixteen years after its first appearance.

FIG. 2.—Appearance of the orbit after the removal of the tumour after death. The disease had found its way through a carious aperture in the orbital plate of the frontal bone to the brain, the enlarged orbital cavity was formed by an adventitious bony deposit.

Fig 1.

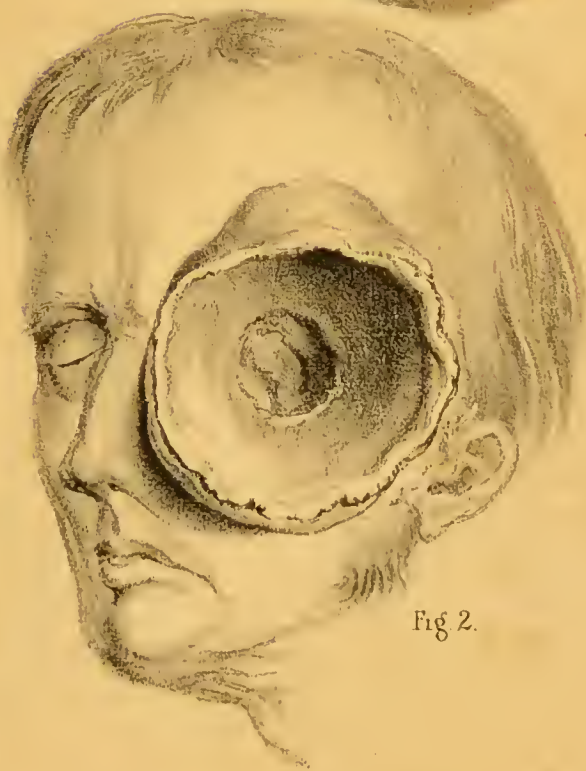
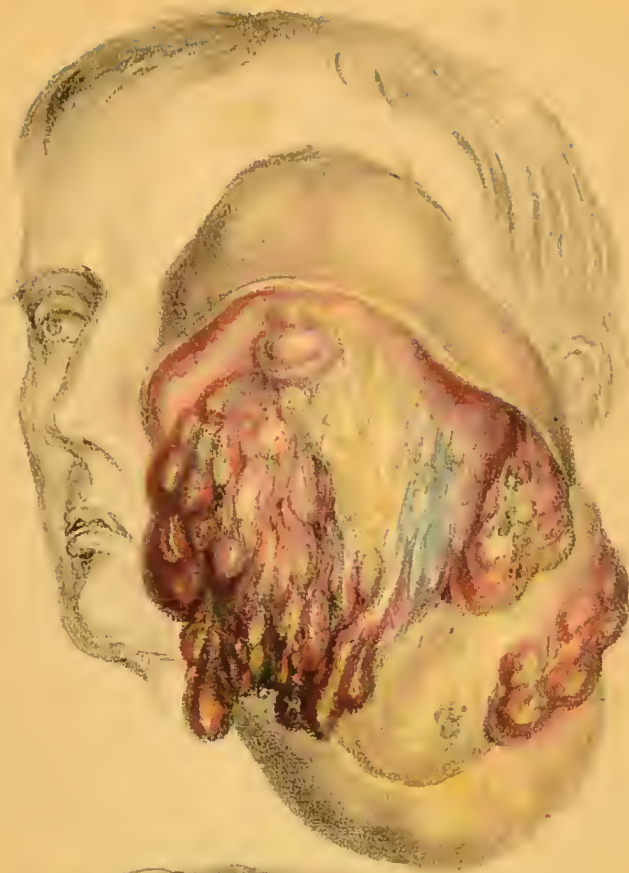


Fig 2.







PLATE X.

FIG. 1.—Melanosis affecting the globe and lids.

FIG. 2, 3, and 4.—Sections of eyes, subjects of malignant disease, illustrating Dr. Hodgson's discovery relative to the formation of serous cysts, as the origin of Cancerous, Fungoid, and Melanotic Diseases.

Fig. 1.

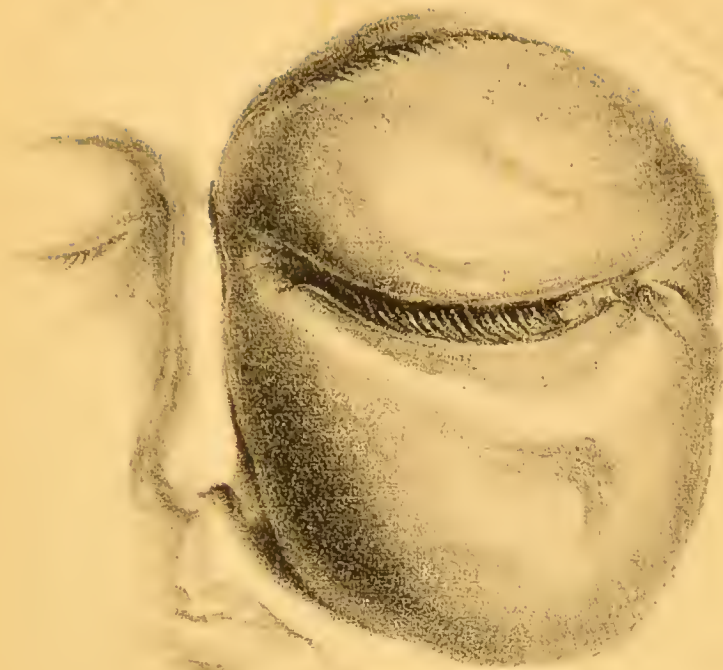


Fig 2.



Fig 3.

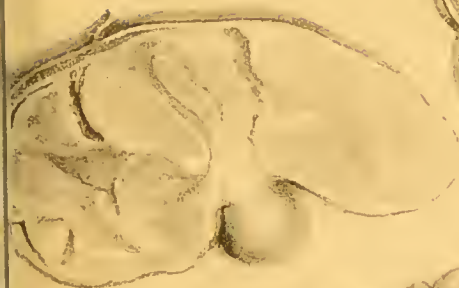


Fig 4









## PLATE XI.

FIG. 1.—Fungus Hæmatodes in its earliest stage; the dilated pupillary aperture presenting a bright metallic appearance, a small fungoid tubercle with minute over-shooting red vessels, making its appearance deep-seated in the posterior part of the globe, a very slight leaden-coloured discoloration hardly perceptible on the anterior part of the sclerotic.

FIG. 2.—Staphyloma Racemosum; a disease not of a malignant character, affecting the external surface of the eye only, the interior of the globe remaining free from disease.

FIG. 3.—Glaucoma; often mistaken for Cataract, but easily distinguished by diagnostic marks described in the course of the work: the difference will be seen strongly represented in Pl. 14, fig. 1, 2, and 3.

Fig. 1.

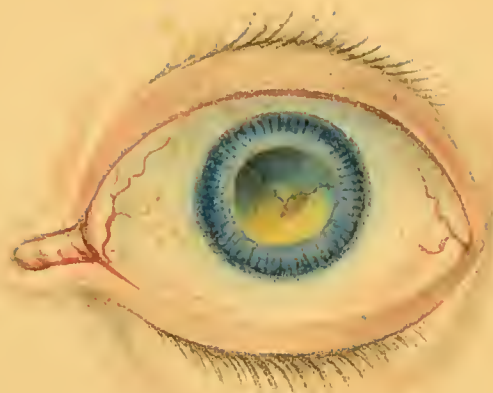


Fig. 2.



Fig. 3.

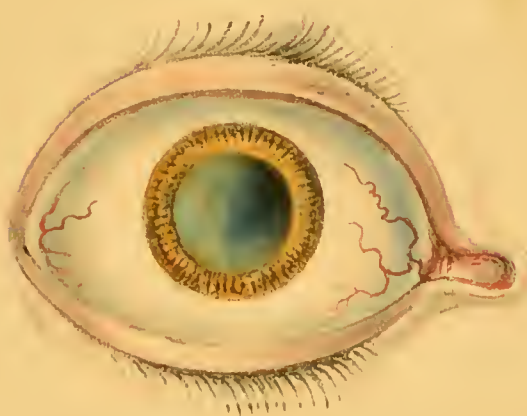






PLATE XII.

Enormously swollen and inflamed lids of a child, the subject of  
Purulent Ophthalmia.









### PLATE XIII.

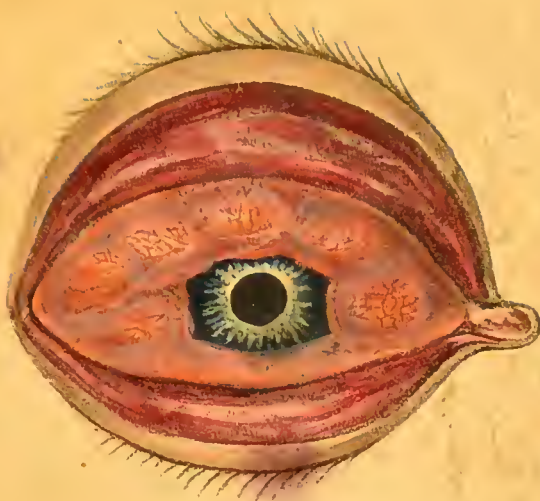
FIG. 1.—Inflammatory Chemosis, the Conjunctiva lining the lids and covering the sclerotic, swollen and highly reddened, the Sclerotic Conjunctiva bagging over the still transparent Cornea, which it partly conceals; this condition of the part is met with as a consequence of various diseases of the membrane.

FIG. 2.—Transparent depression of the Cornea, indicating the situation of an uninfamed ulcer, always seen best by taking a side view of the part.

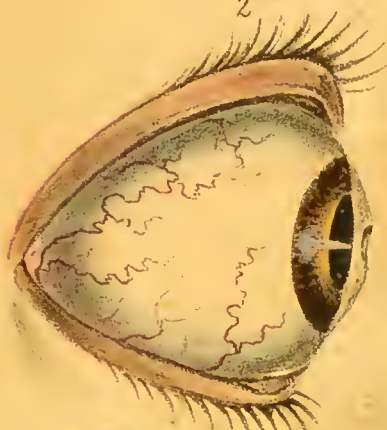
FIG. 3.—Ulcer of the Cornea, which at one spot has nearly penetrated through the coat. In the bottom of the ulcer will be seen a minute vesicular projection, occasioned by the protrusion of a portion of the membrane of the aqueous humour, which has an extremely thin covering of Cornea afforded by its posterior layers.

1

Plate 13.



2



3









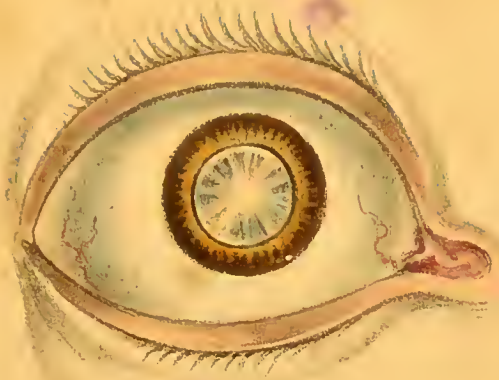
#### PLATE XIV.

FIG. 1.—Capsulo Lenticular Cataract; the talc-like radiated circumference of the Capsule, contrasted with the central Opacity of the Lens.

FIG. 2.—Soft Cataract, showing the effect which enlarged lens produces by its pressure upon the posterior surface of the Iris; in consequence of which, the Uvea is rendered remarkably conspicuous, from being pushed over the margin of the Pupillary Aperture.

FIG. 3.—Central and perfectly Opaque Capsular Cataract, most frequently met with as a Congenital Affection, or as a consequence of wound or injury to the part.

1

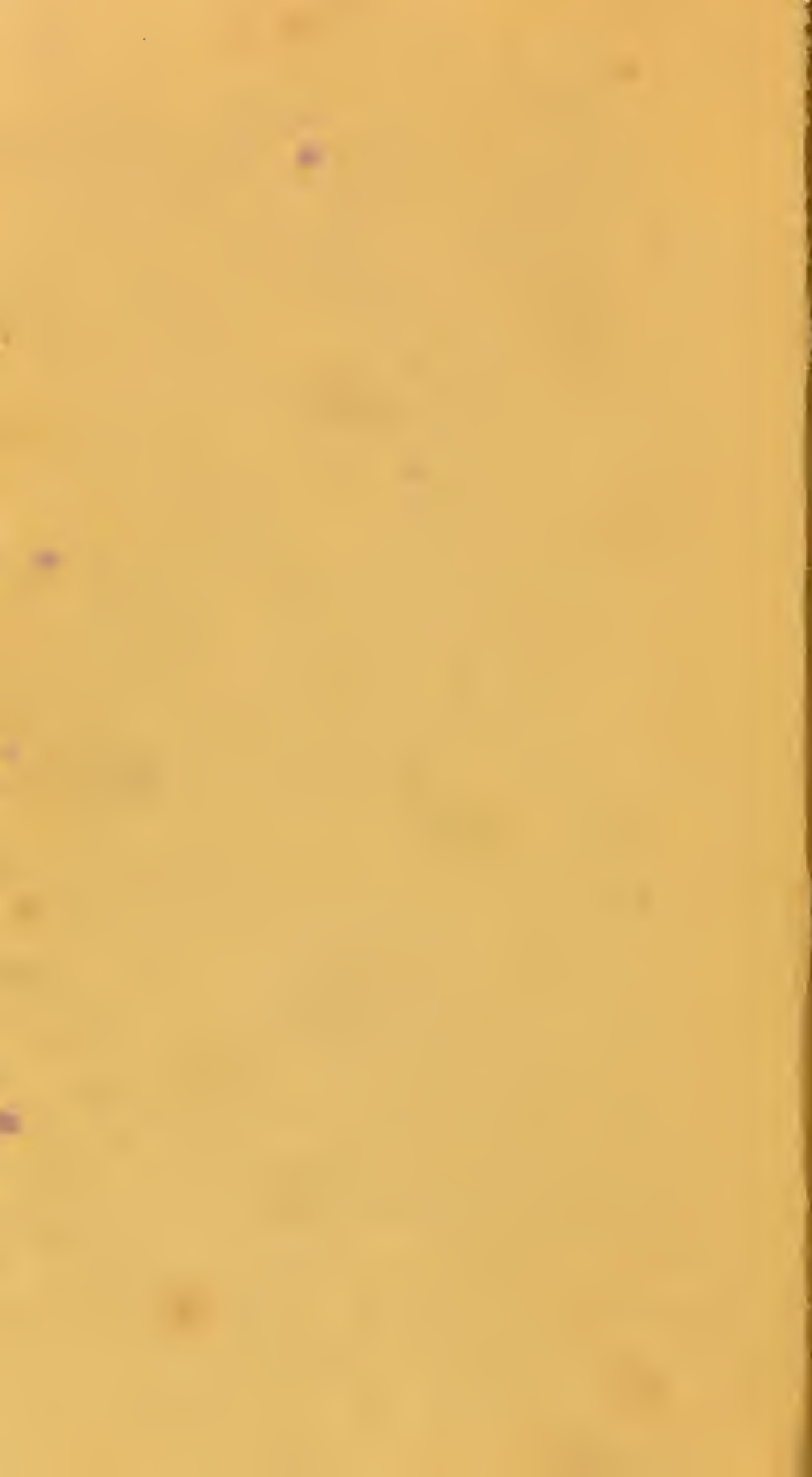


2



3









## PLATE XV.

Is intended to represent the steps of the usual operations for Cataract. In the two first figures, the knife (Wenzels) is passed through the Cornea obliquely from above downwards. In FIG. 1, the point of the instrument has just entered the anterior chamber. In FIG. 2, the section is completed. Should the attempt at making the section here delineated be prevented, and it should be necessary to enlarge an opening which has been made, but which is too small to admit the passage of the lens from the globe in FIG. 3, you will see the mode of proceeding best calculated to effect your object, which consists in completing the section by means of an extremely small probe-pointed and curved bistoury.

FIG. 4. —Transverse Section of the Cornea performed with Beer's knife.

FIG. 5.—Represents the mode of lacerating the Capsule of the Lens, by means of the finely pointed and curved end of the Curette, after the Section has been completed.

FIG. 6.—Operation for Solution,—the Lens soft, and speckled,—the needle passed through the Cornea, its point carried through the centre of the Pupillary Aperture, for the purpose of cutting up the Capsule of the Lens and its anterior Laminæ, without depressing the Opaque body.

FIG. 7 and 8. — Operation for depression. In FIG. 8, the first step of the operation is shown, viz., the passage of the needle through the Sclerotic, its point has been carried behind the Iris, and is seen in the centre of the Pupillary Aperture. In FIG. 7, the point of the instrument has been moved downwards and backwards, carrying with it the Opaque and dislodged Lens.

Fig.1

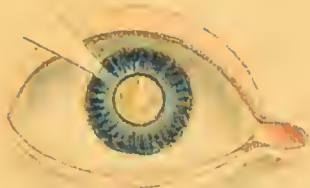


Fig.2



Fig.3

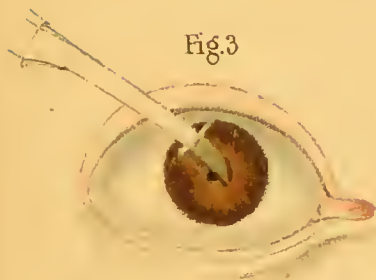


Fig.4

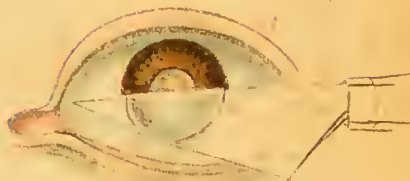


Fig.5

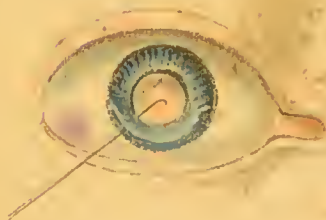


Fig.6



Fig.7

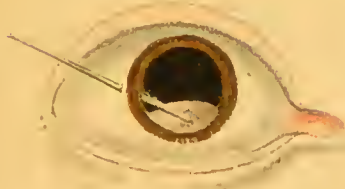
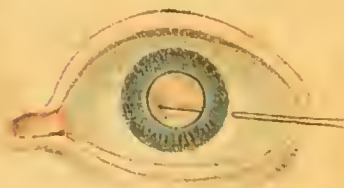


Fig.8



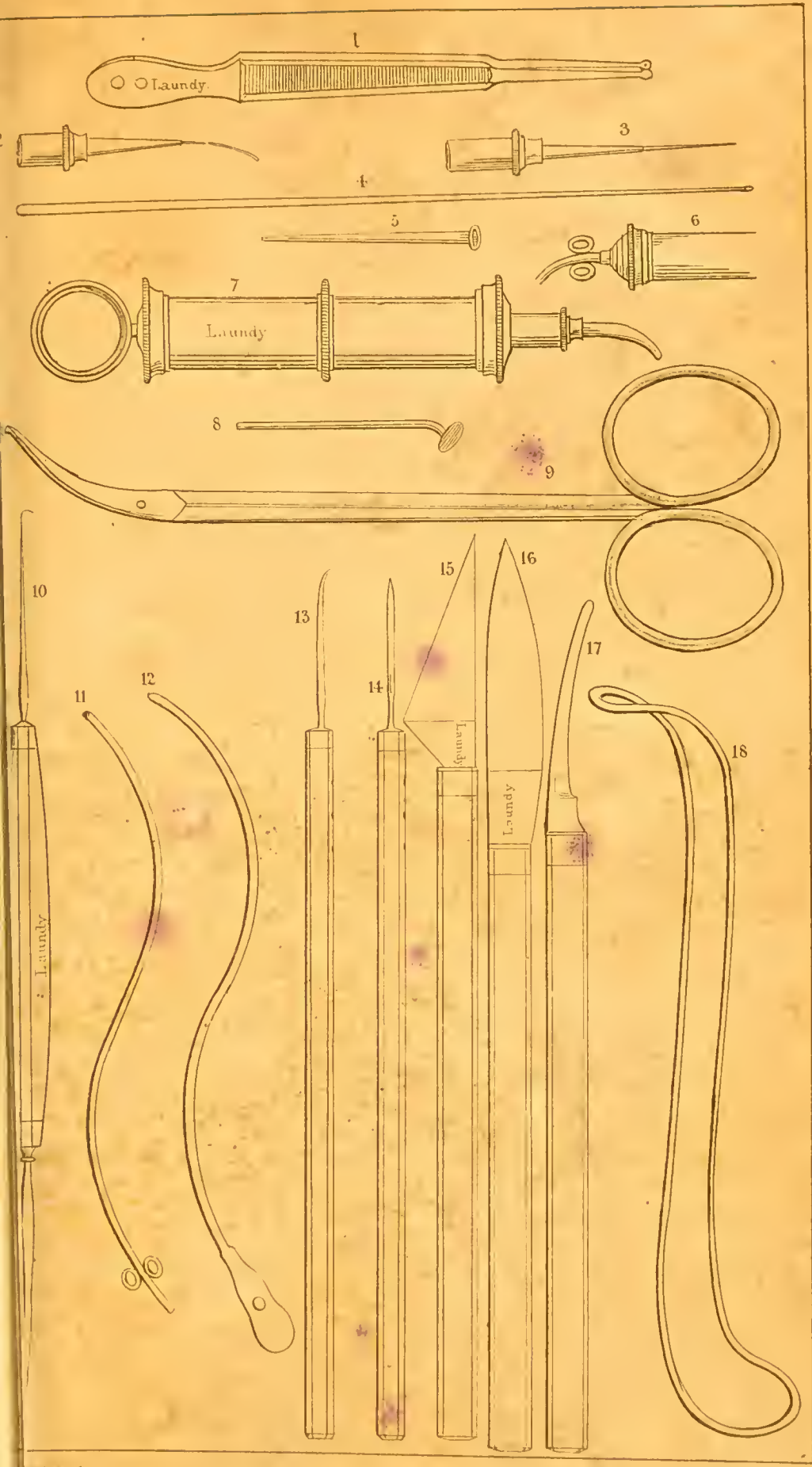




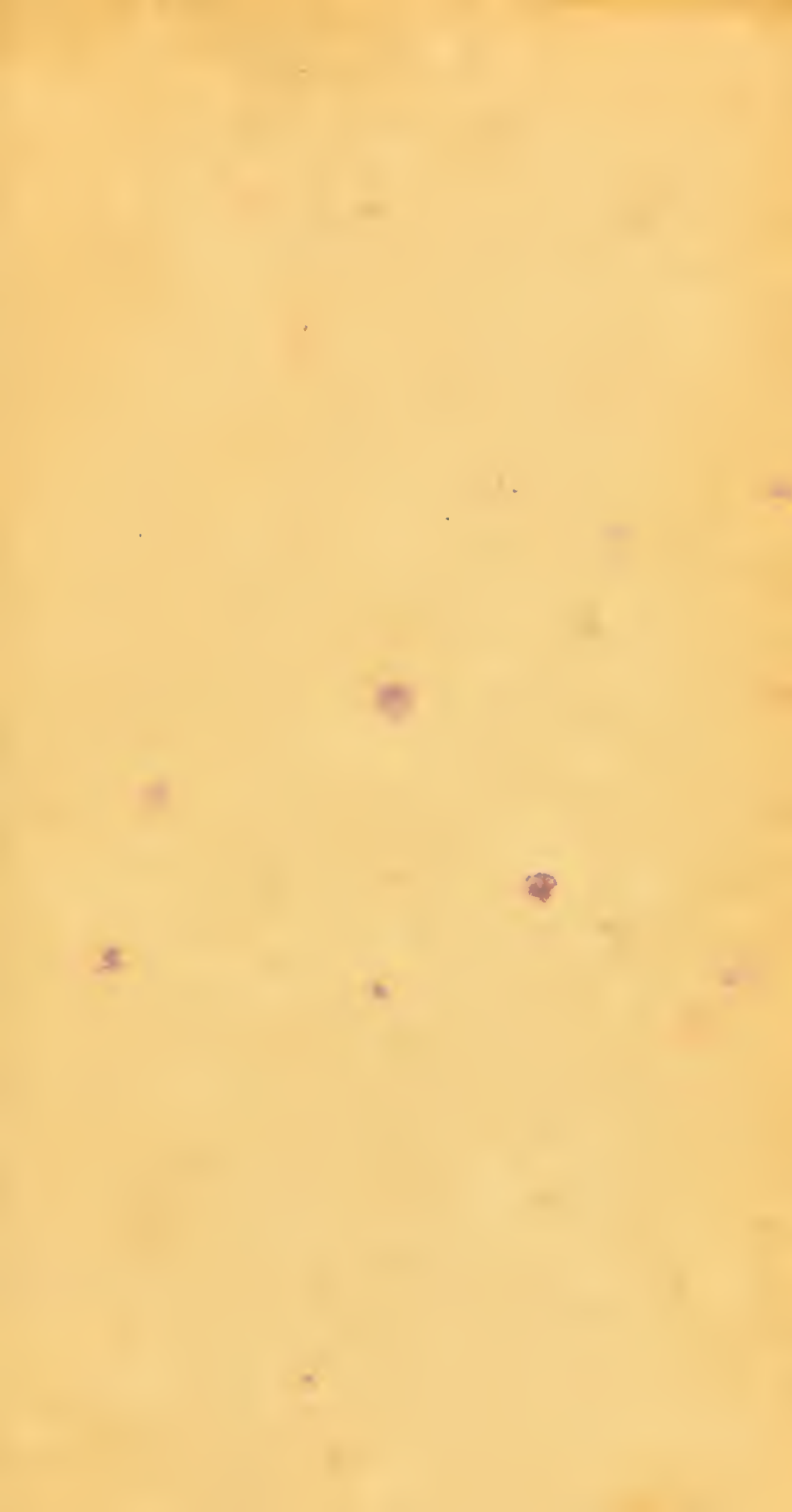


## PLATE XVI.

Figures of Instruments used in different operations on the Eye. It is not considered necessary to give a detailed description of them, which will be found in the Lectures on Operative Ophthalmic Surgery.







## PLATE XVII.

FIG. 1 and 2.—The appearances of Sclerotic and Conjunctival Inflammation contrasted.

FIG. 3 and 4.—Diagrams explanatory of the course of the vessels in each disease.

FIG. 5.—Operation for Artificial Pupil, rendered necessary by Opacity of the Cornea in the axis of Vision: a needle has been passed through the Cornea, by the curved point of which the Ciliary connection of the Iris has been torn away, and an artificial Pupil thus formed through a part of its circumference.

FIG. 6.—Another mode of making an opening through the Iris, where the Pupil has been closed, but where the Cornea remains transparent: it consists in passing a needle with cutting sides through the Sclerotic, carrying the point through the Iris into the anterior chamber, and afterwards making an incised wound, with the sharp edges of the instrument through the Tunica, to admit the passage of the rays of light to the Retina.

FIG. 7.—True Pterygium distinguished by its triangular form from (FIG. 8) Pterygium Pinque.



Fig. 1

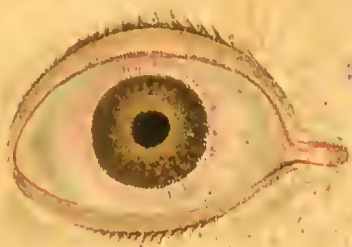


Fig. 2

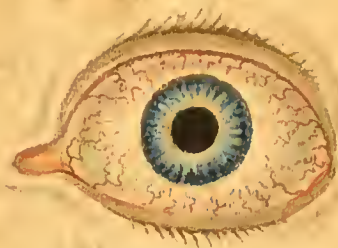


Fig. 3



Fig. 4



Fig. 5.

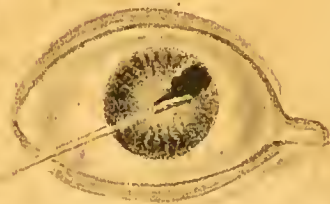


Fig. 6.

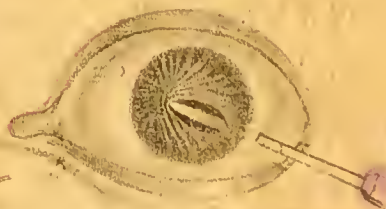


Fig. 7



Fig. 8

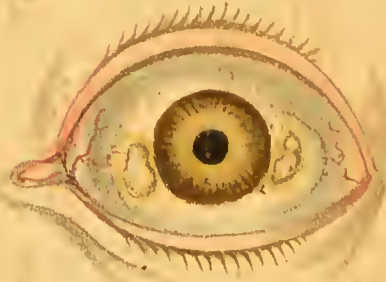




PLATE XVIII.

FIG. 1, 2, and 3.—Different modes of opening the Eye, described in page 24.















